ROUTING RECORD

| DATE | FROM | TO | ACTION |
|---|---|---|---|
| 4-17-08 | AD01 | GR01 | Prescreen |
| 4-23-08 | GR01 | | I Accept C/C |
| 2-12-09 | GR01 | AD01 | PO Recon C/C ECF |
| 4-14-09 | GR01 | AD01 | REV-PO |
| 5-26-09 | AD01 | CA01 | PTO Approved (TV) |
| | | | |
| | | | |
| | | | |
| | | | |

REFERENCE TO OTHER APCD RECORDS INCLUDING VARIANCES

496824

G2958

APPL # 480908
I D. # 29110

ORANGE COUNTY SANITATION DISTRICT
22212 BROCKHURST ST
HUNTINGTON BEACH
INTERNAL COMBUSTION ENGIN4

Date. 04/02/08

(1)

ORANGE COUNTY SANITATION DISTRICT
INTERNAL COMBUSTION ENGIN4

AP480908
ID 29110

South Coast Air Quality Management District

# Form 400-A

# Application For Permit To Construct and Permit To Operate

Mail Application To:
P.O. Box 4944
Diamond Bar, CA 91765

Tel: (909) 396-3385
www.aqmd.gov

## Section A: Operator Information

1. Business Name of Operator To Appear On The Permit:
Orange County Sanitation District

2. Valid AQMD Facility ID (Available on Permit or Invoice issued by AQMD): 029110

3. Owner's Business Name (only if different from Business Name of Operator):

## Section B: Equipment Location

4. Equipment Location Address:
For equipment operated at various locations in AQMD's jurisdiction, provide address of initial site

22212 Brookhurst Street
Street Address

Huntington Beach — CA, — 92646 - 8406
City — State — Zip Code

County: ○ Los Angeles ◉ Orange ○ San Bernardino ○ Riverside

Contact Name: Vlad Kogan

Contact Title: Senior Scientist — Phone: (714) 593-7085

Fax: (714) 962-8379 — E-Mail: vkogan@ocsd.com

## Section C: Permit Mailing Address

5. Permit and Correspondence Information:
☐ Check here if same as equipment location address

10844 Ellis Avenue
Street Address

Fountain Valley — CA — 92708 - 7018
City — State — Zip Code

Contact Name: Vlad Kogan

Contact Title: Senior Scientist — Phone: (714) 593-7085

Fax: (714) 962-8379 — E-Mail: vkogan@ocsd.com

## Section D: Application Type

The facility is in ○ RECLAIM ○ Title V ○ RECLAIM & Title V Program (please check if applicable)

6. Reason for Submitting Application (Select only ONE):

- ○ New Construction (Permit to Construct)
- ○ Equipment Operating Without A Permit or Expired Permit*
- ○ Administrative Change
- ○ Equipment On-Site But Not Constructed or Operational
- ○ Title V Application (Initial, Revisions, Modifications, etc.)
- ○ Compliance Plan
- ○ Facility Permit Amendment
- ○ Registration/Certification
- ○ Streamlined Standard Permit
- ○ Permitted Equipment Altered/ Modified Without Permit Approval*
- ○ Proposed Alteration/Modification to Permitted Equipment
- ○ Change of Condition For Permit To Operate
- ◉ Change of Condition For Permit To Construct
- ○ Change of Location—Moving to New Site

Existing Or Previous Permit/Application Number:
*(If you checked any of the items in this column, you MUST provide a existing Permit/ Application Number)*
A/N 414653

* A Higher Permit Processing Fee applies to those items with an asterisk (Rule 301 (c) (1) (D)

7. Estimated Start Date of Operation/Construction (MM/DD/YYYY): 02/01/2008

8. Description of Equipment:
Internal Combustion Engine (CG1-HB), Cooper Bessemer, Model No. LSVB-16-SGC, 4166 HP, Natural Gas and/or Digester Gas Fired, Driving a 3000 KW Electric Generator

9. Is this equipment portable AND will it be operated at different locations within AQMD's jurisdiction? ◉ No ○ Yes

10. For Identical equipment, how many additional applications are being submitted with this application? (Form 400-A required for each) 4

11. Are you a Small Business as per AQMD's Rule 102 definition? (10 employees or less and total gross receipts are $500,000 or less, or a not-for-profit training center?) ◉ No ○ Yes

12. Has a Notice of Violation (NOV) or a Notice To Comply (NC) been issued for this equipment?
◉ No ○ Yes If yes, provide NOV/NC #:

## Section E: Facility Business Information

13. What type of business is being conducted at this equipment location?
Municipal Wastewater Treatment

14. What is your businesses primary NAICS Code (North American Industrial Classification System)? 221320

15. Are there other facilities in the SCAQMD jurisdiction operated by the same operator? ○ No ◉ Yes

16. Are there any schools (K-12) within a 1000-ft. radius of the equipment physical location? ◉ No ○ Yes

## Section F: Authorization/Signature

I hereby certify that all information contained herein and information submitted with this application is true and correct.

17. Signature of Responsible Official: Mike D. Moore

18. Title: Manager, ECRA

19. Print Name: Mike D. Moore

20. Date: 3/24/08

Check List
- ☐ Form(s) signed and dated by authorized official
- ☐ Supplemental Equipment Form (400-E-XX or 400-E-GEN)
- ☐ CEQA Form (400-CEQA) attached
- ☐ Payment for permit processing fee attached

Your application will be rejected if any of the above items are missing.

| AQMD USE ONLY | APPLICATION/TRACKING # | TYPE B C D | EQUIPMENT CATEGORY CODE | FEE SCHEDULE | VALIDATION |
|---|---|---|---|---|---|
| | 420902 | | 056057 | $734.71 D | 04/02/08 |

| ENG. A R DATE | ENG. A R DATE | CLASS I II IV | ASSIGNMENT Unit A Engineer | CHECK/MONEY ORDER # | AMOUNT $ | Tracking # |
|---|---|---|---|---|---|---|
| A 4/23/08 GCR | | I | A | 10000 99023 | | |



8204 | 15

CT 69016

1 8 5

South Coast Air Quality Management District

# Form 400-CEQA

# California Environmental Quality Act (CEQA) Applicability

Mail Application To:
P.O. Box 4944
Diamond Bar, CA 91765

Tel: (909) 396-3385

**www.aqmd.gov**

The SCAQMD is required by state law, the California Environmental Quality Act (CEQA), to review discretionary permit project applications for potential air quality and other environmental impacts. This form is a screening tool to assist the SCAQMD in clarifying whether or not the project[1] has the potential to generate significant adverse environmental impacts that might require preparation of a CEQA document [CEQA Guidelines §15060(a)].[2] Refer to the attached instructions for guidance in completing this form.[3] For each Form 400-A application, also complete and submit one Form 400-CEQA. If submitting multiple Form 400-A applications for the same project at the same time, only one 400-CEQA form is necessary for the entire project. If you need assistance completing this form, contact Lori Inga at (909) 396-3109.

## FACILITY INFORMATION

| Business Name of Operator to Appear on the Permit: | Facility ID (6-Digit): |
|---|---|
| Orange County Sanitation District | 029110 |

Project Description:

Change of condition for Permit to Construct to allow permitted internal combustion engines to comply with the requirements of Rule 1110.2 - Emissions from Gaseous- and Liquid-Fueled Engines as amended on February 1, 2008.

## REVIEW FOR EXEMPTION FROM FURTHER CEQA ACTION

Check "Yes" or "No" as applicable

| | Yes | No | Is this application for: |
|---|---|---|---|
| A. | ○ | ◉ | A CEQA and/or NEPA document previously or currently prepared that specifically evaluates this project? If yes, a permit cannot be issued until a Final CEQA document and Notice of Determination is submitted. |
| B. | ○ | ◉ | A request for a change of permittee only (without equipment modifications)? |
| C. | ○ | ◉ | Equipment certification or equipment registration (qualifies for Rule 222)? |
| D. | ○ | ◉ | A functionally identical permit unit replacement with no increase in rating or emissions? |
| E. | ○ | ◉ | A change of daily VOC permit limit to a monthly VOC permit limit? |
| F. | ○ | ◉ | Equipment damaged as a result of a disaster during state of emergency? |
| G. | ○ | ◉ | A Title V (i.e., Regulation XXX) permit renewal (without equipment modifications)? |
| H. | ○ | ◉ | A Title V administrative permit revision? |
| I. | ○ | ◉ | The conversion of an existing permit into an initial Title V permit? |

If "Yes" is checked for any question above, your application does not require additional evaluation for CEQA applicability. Skip to page 2, "SIGNATURES" and sign and date this form.

## REVIEW OF IMPACTS WHICH MAY TRIGGER CEQA

Complete Sections I-VI by checking "Yes" or "No" as applicable. To avoid delays in processing your application(s), explain all "Yes" responses on a separate sheet and attach it to this form.

| | Yes | No | Section I – General |
|---|---|---|---|
| 1. | ○ | ◉ | Has this project generated any known public controversy regarding potential adverse impacts that may be generated by the project?<br>Controversy may be construed as concerns raised by local groups at public meetings; adverse media attention such as negative articles in newspapers or other periodical publications, local news programs, environmental justice issues, etc. |
| 2. | ○ | ◉ | Is this project part of a larger project? |
| | | | **Section II – Air Quality** |
| 3. | ○ | ◉ | Will there be any demolition, excavating, and/or grading construction activities that encompass an area exceeding 20,000 square feet? |
| 4. | ○ | ◉ | Does this project include the open outdoor storage of dry bulk solid materials that could generate dust? If Yes, include a plot plan with the application package. |

[1] A "project" means the whole of an action which has a potential for resulting in physical change to the environment, including construction activities, clearing or grading of land, improvements to existing structures, and activities or equipment involving the issuance of a permit. For example, a project might include installation of a new, or modification of an existing internal combustion engine, dry-cleaning facility, boiler, gas turbine, spray coating booth, solvent cleaning tank, etc.

[2] To download the CEQA guidelines, visit http://ceres.ca.gov/env_law/state.html.

[3] To download this form and the instructions, visit http://www.aqmd.gov/ceqa or http://www.aqmd.gov/permit

| | Yes | No | |
|---|---|---|---|
| 5. | ○ | ◉ | **Would this project result in noticeable off-site odors from activities that may not be subject to SCAQMD permit requirements?** For example, compost materials or other types of greenwaste (i.e., lawn clippings, tree trimmings, etc.) have the potential to generate odor complaints subject to Rule 402 – Nuisance. |
| 6. | ○ | ◉ | **Does this project cause an increase of emissions from marine vessels, trains and/or airplanes?** |
| 7. | ○ | ◉ | **Will the proposed project increase the QUANTITY of hazardous materials stored aboveground onsite or transported by mobile vehicle to or from the site by greater than or equal to the amounts associated with each compound on the attached Table 1?[4]** |
| | | | **Section III – Water Resources** |
| 8. | ○ | ◉ | **Will the project increase demand for water at the facility by more than 5,000,000 gallons per day?** The following examples identify some, but not all, types of projects that may result in a "yes" answer to this question: 1) projects that generate steam; 2) projects that use water as part of the air pollution control equipment; 3) projects that require water as part of the production process; 4) projects that require new or expansion of existing sewage treatment facilities; 5) projects where water demand exceeds the capacity of the local water purveyor to supply sufficient water for the project; and 6) projects that require new or expansion of existing water supply facilities. |
| 9. | ○ | ◉ | **Will the project require construction of new water conveyance infrastructure?** Examples of such projects are when water demands exceed the capacity of the local water purveyor to supply sufficient water for the project, or require new or modified sewage treatment facilities such that the project requires new water lines, sewage lines, sewage hook-ups, etc. |
| | | | **Section IV – Transportation/Circulation** |
| 10. | | | **Will the project result in** (Check all that apply)**:** |
| | ○ | ◉ | a. the need for more than 350 new employees? |
| | ○ | ◉ | b. an increase in heavy-duty transport truck traffic to and/or from the facility by more than 350 truck round-trips per day? |
| | ○ | ◉ | c. increase customer traffic by more than 700 visits per day? |
| | | | **Section V – Noise** |
| 11. | ○ | ◉ | **Will the project include equipment that will generate noise GREATER THAN 90 decibels (dB) at the property line?** |
| | | | **Section VI – Public Services** |
| 12. | | | **Will the project create a permanent need for new or additional public services in any of the following areas** (Check all that apply): |
| | ○ | ◉ | a. **Solid waste disposal?** Check "No" if the projected potential amount of wastes generated by the project is less than five tons per day. |
| | ○ | ◉ | b. **Hazardous waste disposal?** Check "No" if the projected potential amount of hazardous wastes generated by the project is less than 42 cubic yards per day (or equivalent in pounds). |

***REMINDER: For each "Yes" checked in the sections above, attach all pertinent information including but not limited to estimated quantities, volumes, weights, etc.***

## SIGNATURES

I HEREBY CERTIFY THAT ALL INFORMATION CONTAINED HEREIN AND INFORMATION SUBMITTED WITH THIS APPLICATION IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE. I UNDERSTAND THAT THIS FORM IS A SCREENING TOOL AND THAT THE SCAQMD RESERVES THE RIGHT TO CONSIDER OTHER PERTINENT INFORMATION IN DETERMINING CEQA APPLICABILITY.

| SIGNATURE OF RESPONSIBLE OFFICIAL OF FIRM: | TITLE OF RESPONSIBLE OFFICIAL OF FIRM: | |
|---|---|---|
| Michael D. Moore | Manager, ECRA | |
| TYPE OR PRINT NAME OF RESPONSIBLE OFFICIAL OF FIRM: | RESPONSIBLE OFFICIAL'S TELEPHONE NUMBER: | DATE Signed: |
| Mike D. Moore | (714) 5937-450 | 3/26/08 |
| SIGNATURE OF PREPARER, IF PREPARED BY PERSON OTHER THAN RESPONSIBLE OFFICIAL OF FIRM: | TITLE OF PREPARER: | |
| V Kogan | Senior Scientist | |
| TYPE OR PRINT NAME OF PREPARER: | PREPARER'S TELEPHONE NUMBER: | DATE Signed: |
| Vlad Kogan | (714) 5937-085 | 3/26/08 |

*THIS CONCLUDES FORM 400-CEQA. INCLUDE THIS FORM AND THE ATTACHMENTS WITH FORM 400-A.*

[4] Table 1 – Regulated Substances List and Threshold Quantities for Accidental Release Prevention can be found in the Instructions for Form 400-CEQA.

SCAQM PERMIT PROCESSING SYSTEM (PPS)

# FEE DATA - SUMMARY SHEET

31

| | | | |
|---|---|---|---|
| Application No : | 480908 | IRS/SS No: | |
| Previous Application No: | 414653 | Previous Permit No: | F96019 |

| | |
|---|---|
| Company Name : | ORANGE COUNTY SANITATION DISTRICT |
| Equipment Street: | 22212 BROOKHURSTST , HUNTINGTON BEACH CA 92646 |
| Equipment Desc : | I C E (>500 HP) NAT & DIGESTER GAS |

Facility ID: 29110

| | | | | | |
|---|---|---|---|---|---|
| Equipment Type : | BASIC | | | Fee Charged by: | B-CAT |
| B-CAT NO. : | 056057 | C-CAT NO: | 00 | Fee Schedule: | D |
| Facility Zone : | 18 | Deemed Compl. Date: | 4/23/2008 | Public Notice: | NO |

| | |
|---|---|
| Evaluation Type : | CHANGE OF CONDITIONS, (PO) |
| Disposition : | Approve PO, Recommended by Engineer |
| Lead Appl. No : | 480908 |

Small Business: ☐
Higher Fees for Failing to Obtain a Permit: ☐
Identical Permit Unit: ☑

| | | | | | |
|---|---|---|---|---|---|
| Air quality Analysis | | | $0.00 | Filing Fee Paid: | $0.00 |
| E.I.R | | | $0.00 | Permit Processing Fee Paid: | $2,734.71 |
| Health Risk Assessment | | | $0.00 | Permit Processing Fee Calculated*: | $2,734.71 |
| Significant Project | | | $0.00 | Permit Processing Fee Adjustment: | $0.00 |
| Expedited Processing | Hours: | 0.00 | $0.00 | | |
| Source Test Review | Hours: | 0.00 | $0.00 | | |
| Time & Material | Hours: | 0.00 | $0.00 | | |
| | | | | Total Additional Fee: | $0.00 |
| | | | | Additional Charge: | $0.00 |

COMMENTS: CHANGE OF CONDITION FOR EMISSION CORRECTION FACTOR (ECF), RULE 1110.2

RECOMMENDED BY: GAURANG RAWAL DATE: 02/10/2009

REVIEWED BY: CDM DATE: 5/26/09

* ADJUSTED FOR SMALL BUSINESS, IDENTICAL EQUIPMENT AND P/O NO P/C PENALTY

SCAQMD PERMIT PROCESSING SYSTEM (PPS)

# AEIS DATA SHEET

Company Name : ORANGE COUNTY SANITATION DISTRICT
Facility ID : 29110
Equipment Address : 22212 BROOKHURST ST
HUNTINGTON BEACH CA 92646

Application Number : 480908
Equipment B-Cat : 056057
Estimated Completion Date : 02/10/09
Equipment C-Cat :
Equipment Type : Basic
Equipment Description : I C E (>500 HP) NAT & DIGESTER GAS

| | Emissions | |
|---|---|---|
| Emittants | R1 LB/HR | R2 LB/HR |
| CO | 27.60 | 27.60 |
| NOX | 8.52 | 8.52 |
| PM10 | 0.75 | 0.75 |
| ROG | 3.87 | 3.87 |
| SOX | 0.87 | 0.87 |

**Applicable Rules**

| | | |
|---|---|---|
| 1110.2 | 02/01/2008 | Emissions from Gaseous-and Liquid-fueled Engines |
| 401 | 11/09/2001 | Visible Emissions |
| 402 | 05/07/1976 | Nuisance |

| | Mon | Tue | Wed | Thu | Fri | Sat | Sun |
|---|---|---|---|---|---|---|---|
| Daily Start Times : | 00:00 | 00:00 | 00:00 | 00:00 | 00:00 | 00:00 | 00:00 |
| Daily Stop Times : | 24:00 | 24:00 | 24:00 | 24:00 | 24:00 | 24:00 | 24:00 |

User's Initials : GR01 Date: 02/10/09 Supervisor's Name : CDT Review Date : 5/26/09

# NSR DATA SUMMARY SHEET

Application No: 480908
Application Type: Change of Conditions
Application Status: PENDAPPRV
Previous Apps,Dev,Permit #: 414653, 0 - ICE-PPS, NONE

---

Company Name: ORANGE COUNTY SANITATION DISTRICT
Company ID: 29110
Address: 22212 BROOKHURST ST,HUNTINGTON BEACH, CA
RECLAIM: NO
RECLAIM Zone: 01
Basin: SC
Zone: 18
Title V: YES

---

Device ID: 0 - ICE-PPS
Estimated Completion Date: 12-30-2008
Heat Input Capacity: 33 Million BTU/hr
Priority Reserve: NONE - No Priority Access Requested
Recommended Disposition: 31 - PERMIT TO OPERATE GRANTED
PR Expiration:
School Within 1000 Feet: NO
Operating Weeks Per Year: 52
Operating Days Per Week: 7
Monday Operating Hours: 00:00 to 24:00
Tuesday Operating Hours: 00:00 to 24:00
Wednesday Operating Hours: 00:00 to 24:00
Thursday Operating Hours: 00:00 to 24:00
Friday Operating Hours: 00:00 to 24:00
Saturday Operating Hours: 00:00 to 24:00
Sunday Operating Hours: 00:00 to 24:00

---

Emittant: CO
BACT:
Cost Effectiveness: NO
Source Type: MAJOR
Emis Increase: 0
Modeling: N/A
Public Notice: N/A
CONTROLLED EMISSION
Max Hourly: 27.6 lbs/hr
Max Daily: 662.4 lbs/day
UNCONTROLLED EMISSION
Max Hourly: 27.6 lbs/hr
Max Daily: 662.4 lbs/day
CURRENT EMISSION
BACT 30 days Avg: 672 lbs/day
Annual Emission: 241113.6 lbs/yr
District Exemption: None

---

Emittant: NOX
BACT:
Cost Effectiveness: NO
Source Type: MAJOR
Emis Increase: 0
Modeling: N/A
Public Notice: N/A
CONTROLLED EMISSION
Max Hourly: 8.52 lbs/hr
Max Daily: 204.48 lbs/day
UNCONTROLLED EMISSION
Max Hourly: 8.52 lbs/hr
Max Daily: 204.48 lbs/day
CURRENT EMISSION
BACT 30 days Avg: 207 lbs/day
Annual Emission: 74430.72 lbs/yr
District Exemption: None

---

Emittant: PM10
BACT:
Cost Effectiveness: NO
Source Type: MINOR
Emis Increase: 0
Modeling: N/A
Public Notice: N/A
CONTROLLED EMISSION
Max Hourly: 0.75 lbs/hr
Max Daily: 18 lbs/day
UNCONTROLLED EMISSION
Max Hourly: 0.75 lbs/hr
Max Daily: 18 lbs/day
CURRENT EMISSION
BACT 30 days Avg: 18 lbs/day
Annual Emission: 6552 lbs/yr
District Exemption: None

---

Emittant: ROG
BACT:
Cost Effectiveness: NO
Source Type: MINOR
Emis Increase: 0
Modeling: N/A
Public Notice: N/A
CONTROLLED EMISSION
Max Hourly: 3.87 lbs/hr
Max Daily: 92.88 lbs/day
UNCONTROLLED EMISSION
Max Hourly: 3.87 lbs/hr
Max Daily: 92.88 lbs/day
CURRENT EMISSION
BACT 30 days Avg: 94 lbs/day
Annual Emission: 33808.32 lbs/yr
District Exemption: None

---

Emittant: SOX
BACT:
Cost Effectiveness: NO
Source Type: MINOR
Emis Increase: 0
Modeling: N/A
Public Notice: N/A
CONTROLLED EMISSION
Max Hourly: 0.87 lbs/hr
Max Daily: 20.88 lbs/day
UNCONTROLLED EMISSION
Max Hourly: 0.87 lbs/hr
Max Daily: 20.88 lbs/day
CURRENT EMISSION
BACT 30 days Avg: 21 lbs/day
Annual Emission: 7600.32 lbs/yr
District Exemption: None

---

SUPERVISOR'S APPROVAL: CDT SUPERVISOR'S REVIEW DATE: 5/26/09

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Processed By: gaurangr 2/10/2009 11:38:15 AM

# FACILITY PERMIT TO OPERATE
# ORANGE COUNTY SANITATION DISTRICT

## PERMIT TO OPERATE

**Permit No. G2958**
**A/N 480908**

**Equipment Description:**

RESOURCE RECOVERY SYSTEM NO. 1 CONSISTING OF:

INTERNAL COMBUSTION ENGINE (CG1-HB), COOPER BESSMER, SPARK IGNITION, FOUR STROKE, WITH A MODIFIED TURBOCHARGED-INTERCOOLED V-16 TYPE, MODEL NO. LSVB-16-SGC, 4166 HP, NATURAL GAS AND/OR DIGESTER GAS FIRED, DRIVING A 3000 KW ELECTRIC GENERATOR, WITH AN EXHAUST HEAT RECOVERY STEAM GENERATOR, 6,010,200 BTU/HR CAPACITY, UNFIRED.

**Conditions:**

1. OPERATION OF THIS EQUIPMENT SHALL BE CONDUCTED IN ACCORDANCE WITH ALL DATA AND SPECIFICATIONS SUBMITTED WITH THE APPLICATION UNDER WHICH THIS PERMIT IS ISSUED UNLESS OTHERWISE NOTED BELOW.
[RULE 204]

2. THIS EQUIPMENT SHALL BE PROPERLY MAINTAINED AND KEPT IN GOOD OPERATING CONDITION AT ALL TIMES.
[RULE 204]

3. THIS EQUIPMENT SHALL BE OPERATED BY PERSONNEL PROPERLY TRAINED IN ITS OPERATION.
[RULE 204]

4. THIS ENGINE SHALL HAVE AN OPERATIONAL NON-RESETTABLE TOTALIZING TIME METER TO DETERMINE THE ENGINE ELAPSED OPERATING TIME FOR EACH FUEL BLEND BURNED.
[RULE 1110.2]

5. A FLOW INDICATING AND RECORDING DEVICE SHALL BE INSTALLED IN THE FUEL GAS, OR FUEL BLEND, SUPPLY LINE TO THE ENGINE TO MEASURE AND RECORD THE QUANTITY OF EACH FUEL GAS (IN SCFM) BURNED.
[RULE 204]

6. SAMPLING PORT SHALL BE INSTALLED FOR THE INLET GAS LINE TO THE ENGINE TO ALLOW THE COLLECTION OF A FUEL GAS OR FUEL BLEND SAMPLES.
[RULE 204]

7. MONTHLY READINGS OF THE BTU CONTENT OF FUEL GAS (BTU/SCF) AT THE COMBINED INLET TO THE CGS ENGINES SHALL BE TAKEN USING AN INSTRUMENT APPROVED BY THE SCAQMD. ALL RESULTS SHALL BE RECORDED.
[RULE 204]

8. ALL RECORDING DEVICES SHALL BE SYNCHRONIZED WITH RESPECT TO THE TIME OF THE DAY.
[RULE 204]

# FACILITY PERMIT TO OPERATE
# ORANGE COUNTY SANITATION DISTRICT

9. THE TOTAL HEAT INPUT OF GASEOUS FUEL, OR FUEL BLEND, BURNED IN THIS ENGINE SHALL NOT EXCEED 33 MM BTU PER HOUR. A LOG SHALL BE KEPT INDICATING THE TOTAL HEATING VALUE OF FUEL GAS, OR FUEL BLEND, BURNED IN THIS ENGINE BASED ON THE RECORDED FLOW RATE (SCFM) AND THE LATEST MONTHLY BTU CONTENT READING.
[RULE 1303 (b) (1) AND 1303 (b) (2)-MODELING AND EMISSIONS OFFSET]

10. THIS EQUIPMENT SHALL BE OPERATED IN COMPLIANCE WITH RULES 218, 431.1 AND 1110.2.
[RULE 218, 431.1 AND 1110.2]

11. THIS EQUIPMENT SHALL BE OPERATED IN SUCH A MANNER THAT THE FOLLOWING EMISSION RATES ARE NOT EXCEEDED.

| AIR CONTAMINANT | |
|---|---|
| CARBON MONOXIDE | 600 PPMV AT 15% O2 |
| PARTICULATES (PM10) | 0.0058 GRAINS/ DSCF |
| ROG OR TNMHC (AS CARBON) | 93 PPMV AT 15% O2 |

[RULE 1303 (a) (1), 1303(b) (1) AND 1303 (b) (2)-BACT, MODELING AND EMISSIONS OFFSET]

12. THE COMBINED EMISSIONS FROM THE THREE (3) CGS ENGINES, USING CALENDAR MONTHLY EMISSIONS DIVIDED BY 30, SHALL NOT EXCEED THE FOLLOWING:

| AIR CONTAMINANT | LBS/DAY |
|---|---|
| CARBON MONOXIDE | 2,644 |
| NITROGEN OXIDES (AS NO2) | 828 |
| PARTICULATES (PM10) | 72 |
| ROG OR TNMHC (AS CH4) | 372 |
| SULFUR DIOXIDE | 84 |

[RULE 1303 (b) (2)-EMISSIONS OFFSET]

13. THE OPERATOR SHALL INSTALL AND MAINTAIN A CONTINUOUS EMISSION MONITORING SYSTEM (CEMS), OR AN ALTERNATIVE SYSTEM, AS APPROVED BY THE EXECUTIVE OFFICER, TO MEASURE THE ENGINE EXHAUST FOR NOx AND O2 CONCENTRATIONS ON A DRY BASIS, EXCEPT DURING SHUTDOWN FOR MAINTENANCE OF THE SYSTEM. IN ADDITION, THE CEMS SHALL CONVERT THE ACTUAL NOx TO MASS EMISSION RATES; AND RECORD THE ACTUAL AND CORRECTED ENGINE NOx CONCENTRATION AT 15% O2 AND MASS EMISSION RATES ON AN HOURLY AND DAILY BASIS.
[RULE 218, RULE 1110.2]

14. THE OPERATOR SHALL CONDUCT PERFORMANCE TESTS ANNUALLY. WRITTEN NOTICE OF THE PERFORMANCE TEST SHALL BE PROVIDED TO THE AQMD AT LEAST 7 DAYS PRIOR TO THE TEST SO THAT AN OBSERVER MAY BE PRESENT. A COMPLETE FINAL REPORT OF THE TEST (LBS/HR, PPMVD AT 15% O2, LBS/MMBTU, ETC.) SHALL BE PROVIDED TO THE AQMD WITHIN 45 DAYS AFTER TESTING. ALL TEST RUNS REQUIRED BY AQMD SHALL BE REPORTED. THE TESTS SHALL INCLUDE BUT NOT BE LIMITED TO, A TEST OF THE FUELS BURNED AND ENGINE EXHAUST FOR:

A. TOTAL NON-METHANE HYDROCARBONS (EXHAUST ONLY)
B. CARBON MONOXIDE (EXHAUST ONLY)
C. TOTAL PARTICULATE MATTER (EXHAUST ONLY).
D. OXIDES OF NITROGEN (EXHAUST ONLY).

# FACILITY PERMIT TO OPERATE
# ORANGE COUNTY SANITATION DISTRICT

E. OXYGEN
F. FLOW RATE
G. MOISTURE
H. TOXIC AIR CONTAMINANTS (EXHAUST ONLY), FOR ONE ENGINE PER YEAR
I. ALDEHYDES (EXHAUST ONLY), FOR ONE ENGINE PER YEAR
J. TOTAL REDUCED SULFUR COMPOUNDS (FUEL ONLY)
K. NITROGEN AND CARBON DIOXIDE
L. BTU CONTENTS (FUEL ONLY)
M. POWER OUTPUT

[RULE 1303(b) (1) AND 1303(b) (2) - MODELING AND EMISSION OFFSET], [RULE 1110.2], [RULE 404]

15 RECORDS SHALL BE KEPT AND MAINTAINED TO PROVE COMPLIANCE WITH ALL CONDITIONS FOR THIS PERMIT. THE RECORDS SHALL BE KEPT ON FILE FOR AT LEAST FIVE YEARS AND SHALL BE MADE AVAILABLE TO AQMD PERSONNEL UPON REQUEST.
[RULE 204]

**Emissions And Requirements:**

16. THIS EQUIPMENT IS SUBJECT TO THE APPLICABLE REQUIREMENTS OF THE FOLLOWING RULES AND REGULATIONS:

CO: 2000 PPMV, RULE 1110.2
NOx: 45.4 PPMV, RULE 1110.2 (WITH ECF ADJUSTMENT FACTOR = 1.26)
ROG: 315 PPMV, RULE 1110.2 (WITH ECF ADJUSTMENT FACTOR = 1.26)
PM: RULE 404, SEE APPENDIX B FOR EMISSION LIMITS.
SO2: 500 PPMV AS SO2, ORANGE COUNTY, RULE 53

# FACILITY PERMIT TO OPERATE
# ORANGE COUNTY SANITATION DISTRICT

## PERMIT TO OPERATE

**Permit No. G2959**
**A/N 480909**

**Equipment Description:**

RESOURCE RECOVERY SYSTEM NO. 2 CONSISTING OF:

INTERNAL COMBUSTION ENGINE (CG2-HB), COOPER BESSMER, SPARK IGNITION, FOUR STROKE, WITH A MODIFIED TURBOCHARGED-INTERCOOLED V-16 TYPE, MODEL NO. LSVB-16-SGC, 4166 HP, NATURAL GAS AND/OR DIGESTER GAS FIRED, DRIVING A 3000 KW ELECTRIC GENERATOR, WITH AN EXHAUST HEAT RECOVERY STEAM GENERATOR, 6,010,200 BTU/HR CAPACITY, UNFIRED.

**Conditions:**

1. OPERATION OF THIS EQUIPMENT SHALL BE CONDUCTED IN ACCORDANCE WITH ALL DATA AND SPECIFICATIONS SUBMITTED WITH THE APPLICATION UNDER WHICH THIS PERMIT IS ISSUED UNLESS OTHERWISE NOTED BELOW.
   [RULE 204]

2. THIS EQUIPMENT SHALL BE PROPERLY MAINTAINED AND KEPT IN GOOD OPERATING CONDITION AT ALL TIMES.
   [RULE 204]

3. THIS EQUIPMENT SHALL BE OPERATED BY PERSONNEL PROPERLY TRAINED IN ITS OPERATION.
   [RULE 204]

4. THIS ENGINE SHALL HAVE AN OPERATIONAL NON-RESETTABLE TOTALIZING TIME METER TO DETERMINE THE ENGINE ELAPSED OPERATING TIME FOR EACH FUEL BLEND BURNED.
   [RULE 1110.2]

5. A FLOW INDICATING AND RECORDING DEVICE SHALL BE INSTALLED IN THE FUEL GAS, OR FUEL BLEND, SUPPLY LINE TO THE ENGINE TO MEASURE AND RECORD THE QUANTITY OF EACH FUEL GAS (IN SCFM) BURNED.
   [RULE 204]

6. SAMPLING PORT SHALL BE INSTALLED FOR THE INLET GAS LINE TO THE ENGINE TO ALLOW THE COLLECTION OF A FUEL GAS OR FUEL BLEND SAMPLES.
   [RULE 204]

7. MONTHLY READINGS OF THE BTU CONTENT OF FUEL GAS (BTU/SCF) AT THE COMBINED INLET TO THE CGS ENGINES SHALL BE TAKEN USING AN INSTRUMENT APPROVED BY THE SCAQMD. ALL RESULTS SHALL BE RECORDED.
   [RULE 204]

8. ALL RECORDING DEVICES SHALL BE SYNCHRONIZED WITH RESPECT TO THE TIME OF THE DAY.
   [RULE 204]

## Gaurang Rawal

**From:** Gaurang Rawal
**Sent:** Wednesday, May 06, 2009 10:16 AM
**To:** Kogan, Vlad
**Cc:** Amir Dejbakhsh; Charles Tupac
**Subject:** RE: Di-gas ratio

Vlad,

New applications are required, along with Title V revision application, for greater than 10% NG augmentation. Please provide justifications for such usage. This may include, but not limited to;

1. Design capacity for the facility's Digester gas (DG) production rate, scfm.
2. DG production rate, as % of design capacity, over the last two-year.
3. Minimum % load (in terms of DG heat input rate, considering thermal efficiency) that each CGS can be run on DG in compliance with current rules.
4. Number of CGS engines can be run on DG, simultaneously, at minimum load.
5. Scenario(s) when >10% NG augmentation is required (scfm or % of heat input based on monthly avg.), breakdown for DG and NG heat input, duration for such operation, and demonstrate that it can comply with R1110.2 requirements.
6. Currently, OCSD is able to operate engines with DG only. What are the consequences if >10% NG is prohibitive.
7. Assume that boiler can be operated on NG only (dual fuel operation), thereby using available DG for CGS engines only.

FYI...one of the POTW facilities had withdrawn their request for >10% NG usage. I am unaware about ECF based permits for other facilities, however, in my opinion ECF based emissions can be addressed for other POTW facilities with required source tests results (per Rule 1110.2, ASME Performance Test Code PTC 17-1973).

Gaurang Rawal
Air Quality Engineer
Refinery & Waste Management
South Coast A.Q.M. D.
21865 Copley Drive
D .ond Bar, CA 91765
grawal@aqmd.gov
Ph: (909) 396-2543
FAX: (909) 396-3341

-----Original Message-----
**From:** Kogan, Vlad
**Sent:** Wednesday, May 06, 2009 8:50 AM
**To:** Gaurang Rawal
**Cc:** Amir Dejbakhsh; Charles Tupac
**Subject:** RE: Di-gas ratio

Gaurang,

OCSD e-mails you are referring to were sent to you by your request as a condition of allowing us to include ECFs in our permit conditions without delay. If you remember we needed the ECFs to avoid receiving NOVs from your inspectors. We greatly appreciate your positive response to our request but we have never considered this action as a permanent withdrawn of our application to burn more than 10% natural gas if necessary. Though we are currently trying to fuel the engines by close to 100% di-gas there might be cases when this amount of gas is not available. One example is the upcoming source testing of flares when about a half of daily di-gas production will be used for burning in flares and supplementing of di-gas by 30-40% of the natural gas, albeit temporarily, will be required. Do you think that we should

submit a new application for permission to burn more than 10% natural gas if necessary?

My e-mail to you is somehow broader than OCSD issues. As I mentioned, several other POTWs expressed concern regarding both provisions –ECFs and natural gas as related to their engines. I was directed to gather related materials and submit the corresponding letter to Mr. Nazemi. So, my question is basically related to other facilities. If no other POTWs have problems with these issues please let me now. If the problems do exist can you tell me what is the reason?

Thank you for your consideration and reply.
VK

---

**From:** Gaurang Rawal [mailto:grawal@aqmd.gov]
**Sent:** Wednesday, May 06, 2009 8:21 AM
**To:** Kogan, Vladimir
**Cc:** Amir Dejbakhsh; Charles Tupac
**Subject:** RE: Di-gas ratio

Vlad,

Regarding provision for CGS to burn more than 10% natural gas;

Please refer to the attached E-mails from Halverson, David (O & M) – Feb. 5, 2009 and your E-mails – Feb. 11 & 12, 2009.

CGS applications (Plant 2, ID 29110) were processed only for change of condition for ECF based NOx and ROG emissions (R1110.2), and **NOT** for >10% natural gas as this request was withdrawn per OCSD's written confirmation.

Plant 1 (ID 17301) did not have >10% NG request for change of condition applications.

CGS can be source tested with up to 10% NG augmentation per Rule 1110.2.

**ECF applications for Plant 1**- On April 1, 2009 the letter was sent to EPA for their 45-day review/commenting (cc: to James D. Ruth, General Manager, OCSD). We expect to complete and issue Title V permit revision around last week of May 2009.

**ECF applications for Plant 2**- On April 16, 2009 the letter was sent to EPA for their 45-day review/commenting (cc: to James D. Ruth, General Manager, OCSD). We expect to complete and issue Title V permit revision during 2nd week of June 2009.

Hope, this answers your inquiry and status of the CGS applications.

Regards,

Gaurang Rawal
Air Quality Engineer
Refinery & Waste Management
South Coast A.Q.M. D.
21865 Copley Drive
Diamond Bar, CA 91765
grawal@aqmd.gov
Ph: (909) 396-2543
FAX: (909) 396-3341

-----Original Message-----
**From:** Kogan, Vlad
**Sent:** Tuesday, May 05, 2009 4:53 PM
**To:** Amir Dejbakhsh; Gaurang Rawal
**Subject:** Di-gas ratio

Hi Amir and Gaurang,

Let me once more remind you that we still haven't received a provision in our CGS engines permits that would allow us to burn more than 10% natural gas if necessary. We submitted such applications more than a year ago. We are currently planning to test flares and during the testing it would be necessary to supplement di-gas by natural gas in the engines fuel mixture.

It looks like it is not just our problem. Our SCAP AQ committee directed me to prepare materials on this issue (and to the Efficiency Correction Factors) for the letter to Mohsen Nazemi. As you know I always prefer to avoid any complains to the management. So, please notify me regarding the situation with such applications. It looks like we might get the ECFs in our permits soon, correct?

Please contact me as soon as you can. Thanks,
VK
Vlad Kogan
Senior Scientist
Environmental Compliance Division
Orange County Sanitation District
Tel: 714-593-7085
Fax: 714-962-8379

## Gaurang Rawal

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Hope, this answers your inquiry and status of the CGS applications.

Regards,

Gaurang Rawal
Air Quality Engineer
Refinery & Waste Management
South Coast A.Q.M. D.
21065 Copley Drive
Diamond Bar, CA 91765
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**Sent:** Tuesday, May 05, 2009 4:53 PM
**To:** Amir Dejbakhsh; Gaurang Rawal
**Subject:** Di-gas ratio

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Please contact me as soon as you can. Thanks,
VK

Vlad Kogan
Senior Scientist
Environmental Compliance Division
Orange County Sanitation District
Tel: 714-593-7085
Fax: 714-962-8379

# FACILITY PERMIT TO OPERATE
# ORANGE COUNTY SANITATION DISTRICT

## PERMIT TO OPERATE

**Permit No. TBD**
**A/N 480908**

**Equipment Description:**

RESOURCE RECOVERY SYSTEM NO. 1 CONSISTING OF:

INTERNAL COMBUSTION ENGINE (CG1-HB), COOPER BESSMER, SPARK IGNITION, FOUR STROKE, WITH A MODIFIED TURBOCHARGED-INTERCOOLED V-16 TYPE, MODEL NO. LSVB-16-SGC, 4166 HP, NATURAL GAS AND/OR DIGESTER GAS FIRED, DRIVING A 3000 KW ELECTRIC GENERATOR, WITH AN EXHAUST HEAT RECOVERY STEAM GENERATOR, 6,010,200 BTU/HR CAPACITY, UNFIRED.

**Conditions:**

1. OPERATION OF THIS EQUIPMENT SHALL BE CONDUCTED IN ACCORDANCE WITH ALL DATA AND SPECIFICATIONS SUBMITTED WITH THE APPLICATION UNDER WHICH THIS PERMIT IS ISSUED UNLESS OTHERWISE NOTED BELOW.
[RULE 204]

2. THIS EQUIPMENT SHALL BE PROPERLY MAINTAINED AND KEPT IN GOOD OPERATING CONDITION AT ALL TIMES.
[RULE 204]

3. THIS EQUIPMENT SHALL BE OPERATED BY PERSONNEL PROPERLY TRAINED IN ITS OPERATION.
[RULE 204]

4. THIS ENGINE SHALL HAVE AN OPERATIONAL NON-RESETTABLE TOTALIZING TIME METER TO DETERMINE THE ENGINE ELAPSED OPERATING TIME FOR EACH FUEL BLEND BURNED.
[RULE 1110.2]

5. A FLOW INDICATING AND RECORDING DEVICE SHALL BE INSTALLED IN THE FUEL GAS, OR FUEL BLEND, SUPPLY LINE TO THE ENGINE TO MEASURE AND RECORD THE QUANTITY OF EACH FUEL GAS (IN SCFM) BURNED.
[RULE 204]

6. SAMPLING PORT SHALL BE INSTALLED FOR THE INLET GAS LINE TO THE ENGINE TO ALLOW THE COLLECTION OF A FUEL GAS OR FUEL BLEND SAMPLES.
[RULE 204]

7. MONTHLY READINGS OF THE BTU CONTENT OF FUEL GAS (BTU/SCF) AT THE COMBINED INLET TO THE CGS ENGINES SHALL BE TAKEN USING AN INSTRUMENT APPROVED BY THE SCAQMD. ALL RESULTS SHALL BE RECORDED.
[RULE 204]

8. ALL RECORDING DEVICES SHALL BE SYNCHRONIZED WITH RESPECT TO THE TIME OF THE DAY.
[RULE 204]

# FACILITY PERMIT TO OPERATE
# ORANGE COUNTY SANITATION DISTRICT

9. THE TOTAL HEAT INPUT OF GASEOUS FUEL, OR FUEL BLEND, BURNED IN THIS ENGINE SHALL NOT EXCEED 33 MM BTU PER HOUR. A LOG SHALL BE KEPT INDICATING THE TOTAL HEATING VALUE OF FUEL GAS, OR FUEL BLEND, BURNED IN THIS ENGINE BASED ON THE RECORDED FLOW RATE (SCFM) AND THE LATEST MONTHLY BTU CONTENT READING.
[RULE 1303 (b) (1) AND 1303 (b) (2)-MODELING AND EMISSIONS OFFSET]

10. THIS EQUIPMENT SHALL BE OPERATED IN COMPLIANCE WITH RULES 218, 431.1 AND 1110.2.
[RULE 218, 431.1 AND 1110.2]

11. THIS EQUIPMENT SHALL BE OPERATED IN SUCH A MANNER THAT THE FOLLOWING EMISSION RATES ARE NOT EXCEEDED.

| AIR CONTAMINANT | |
|---|---|
| CARBON MONOXIDE | 600 PPMV AT 15% O2 |
| PARTICULATES (PM10) | 0.0058 GRAINS/ DSCF |
| ROG OR TNMHC (AS CARBON) | 93 PPMV AT 15% O2 |

[RULE 1303 (a) (1), 1303(b) (1) AND 1303 (b) (2)-BACT, MODELING AND EMISSIONS OFFSET]

12. THE COMBINED EMISSIONS FROM THE THREE (3) CGS ENGINES, USING CALENDAR MONTHLY EMISSIONS DIVIDED BY 30, SHALL NOT EXCEED THE FOLLOWING:

| AIR CONTAMINANT | LBS/DAY |
|---|---|
| CARBON MONOXIDE | 2,644 |
| NITROGEN OXIDES (AS NO2) | 828 |
| PARTICULATES (PM10) | 72 |
| ROG OR TNMHC (AS CH4) | 372 |
| SULFUR DIOXIDE | 84 |

[RULE 1303 (b) (2)-EMISSIONS OFFSET]

13. THE OPERATOR SHALL INSTALL AND MAINTAIN A CONTINUOUS EMISSION MONITORING SYSTEM (CEMS), OR AN ALTERNATIVE SYSTEM, AS APPROVED BY THE EXECUTIVE OFFICER, TO MEASURE THE ENGINE EXHAUST FOR NOx AND O2 CONCENTRATIONS ON A DRY BASIS, EXCEPT DURING SHUTDOWN FOR MAINTENANCE OF THE SYSTEM. IN ADDITION, THE CEMS SHALL CONVERT THE ACTUAL NOx TO MASS EMISSION RATES; AND RECORD THE ACTUAL AND CORRECTED ENGINE NOx CONCENTRATION AT 15% O2 AND MASS EMISSION RATES ON AN HOURLY AND DAILY BASIS.
[RULE 218, RULE 1110.2]

14. THE OPERATOR SHALL CONDUCT PERFORMANCE TESTS ANNUALLY. WRITTEN NOTICE OF THE PERFORMANCE TEST SHALL BE PROVIDED TO THE AQMD AT LEAST 7 DAYS PRIOR TO THE TEST SO THAT AN OBSERVER MAY BE PRESENT. A COMPLETE FINAL REPORT OF THE TEST (LBS/HR, PPMVD AT 15% O2, LBS/MMBTU, ETC.) SHALL BE PROVIDED TO THE AQMD WITHIN 45 DAYS AFTER TESTING. ALL TEST RUNS REQUIRED BY AQMD SHALL BE REPORTED. THE TESTS SHALL INCLUDE BUT NOT BE LIMITED TO, A TEST OF THE FUELS BURNED AND ENGINE EXHAUST FOR:

A. TOTAL NON-METHANE HYDROCARBONS (EXHAUST ONLY)
B. CARBON MONOXIDE (EXHAUST ONLY)
C. TOTAL PARTICULATE MATTER (EXHAUST ONLY).
D. OXIDES OF NITROGEN (EXHAUST ONLY).

# FACILITY PERMIT TO OPERATE
# ORANGE COUNTY SANITATION DISTRICT

E. OXYGEN
F. FLOW RATE
G. MOISTURE
H. TOXIC AIR CONTAMINANTS (EXHAUST ONLY), FOR ONE ENGINE PER YEAR
I. ALDEHYDES (EXHAUST ONLY), FOR ONE ENGINE PER YEAR
J. TOTAL REDUCED SULFUR COMPOUNDS (FUEL ONLY)
K. NITROGEN AND CARBON DIOXIDE
L. BTU CONTENTS (FUEL ONLY)
M. POWER OUTPUT

[RULE 1303(b) (1) AND 1303(b) (2) - MODELING AND EMISSION OFFSET], [RULE 1110.2], [RULE 404]

15 RECORDS SHALL BE KEPT AND MAINTAINED TO PROVE COMPLIANCE WITH ALL CONDITIONS FOR THIS PERMIT. THE RECORDS SHALL BE KEPT ON FILE FOR AT LEAST FIVE YEARS AND SHALL BE MADE AVAILABLE TO AQMD PERSONNEL UPON REQUEST.
[RULE 204]

**Emissions And Requirements:**

16. THIS EQUIPMENT IS SUBJECT TO THE APPLICABLE REQUIREMENTS OF THE FOLLOWING RULES AND REGULATIONS:

CO: 2000 PPMV, RULE 1110.2
NOx: 45.4 PPMV, RULE 1110.2 (WITH ECF ADJUSTMENT FACTOR = 1.26)
ROG: 315 PPMV, RULE 1110.2 (WITH ECF ADJUSTMENT FACTOR = 1.26)
PM: RULE 404, SEE APPENDIX B FOR EMISSION LIMITS.

| SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT | PAGES 6 | PAGE 1 |
|---|---|---|
| ENGINEERING AND COMPLIANCE DIVISION | APPL NO SEE BELOW | DATE 4/14/2009 |
| PERMIT APPLICATION EVALUATION AND CALCULATIONS | PROCESSED BY GCR | CHECKED BY CA |

## PERMIT TO OPERATE (CHANGE OF CONDITION) EVALUATION

**APPLICANT'S NAME:** ORANGE COUNTY SANITATION DISTRICT (OCSD)

**MAILING ADDRESS:** 10844 ELLIS AVENUE
FOUNTAIN VALLEY, CA 92708
ATTN.: VLAD KOGAN, SENIOR SCIENTIST

**EQUIPMENT ADDRESS:** 22212 BROOKHURST STREET
(WASTEWATER TREATMENT PLANT NO. 2)
HUNTINGTON BEACH, CA 92646-8406

**FACILITY ID NO.:** **029110**

**EQUIPMENT DESCRIPTION:**

**APPLICATION NO. 480908**

RESOURCE RECOVERY SYSTEM NO. 1 CONSISTING OF:

INTERNAL COMBUSTION ENGINE (CG1-HB), COOPER BESSMER, SPARK IGNITION, FOUR STROKE, WITH A MODIFIED TURBOCHARGED-INTERCOOLED V-16 TYPE, MODEL NO. LSVB-16-SGC, 4166 HP, NATURAL GAS AND/OR DIGESTER GAS FIRED, DRIVING A 3000 KW ELECTRIC GENERATOR, WITH AN EXHAUST HEAT RECOVERY STEAM GENERATOR, 6,010,200 BTU/HR CAPACITY, UNFIRED.

**APPLICATION NO. 480909**

RESOURCE RECOVERY SYSTEM NO. 2 CONSISTING OF:

INTERNAL COMBUSTION ENGINE (CG2-HB), COOPER BESSMER, SPARK IGNITION, FOUR STROKE, WITH A MODIFIED TURBOCHARGED-INTERCOOLED V-16 TYPE, MODEL NO. LSVB-16-SGC, 4166 HP, NATURAL GAS AND/OR DIGESTER GAS FIRED, DRIVING A 3000 KW ELECTRIC GENERATOR, WITH AN EXHAUST HEAT RECOVERY STEAM GENERATOR, 6,010,200 BTU/HR CAPACITY, UNFIRED.

**APPLICATION NO. 480911**

RESOURCE RECOVERY SYSTEM NO. 3 CONSISTING OF:

INTERNAL COMBUSTION ENGINE (CG3-HB), COOPER BESSMER, SPARK IGNITION, FOUR STROKE, WITH A MODIFIED TURBOCHARGED-INTERCOOLED V-16 TYPE, MODEL NO. LSVB-16-SGC, 4166 HP, NATURAL GAS AND/OR DIGESTER GAS FIRED, DRIVING A 3000 KW ELECTRIC GENERATOR, WITH AN EXHAUST HEAT RECOVERY STEAM GENERATOR, 6,010,200 BTU/HR CAPACITY, UNFIRED.

**APPLICATION NO. 480912**

RESOURCE RECOVERY SYSTEM NO. 4 CONSISTING OF:

INTERNAL COMBUSTION ENGINE (CG4-HB), COOPER BESSMER, SPARK IGNITION, FOUR STROKE, WITH A MODIFIED TURBOCHARGED-INTERCOOLED V-16 TYPE, MODEL NO. LSVB-16-SGC, 4166 HP, NATURAL GAS AND/OR DIGESTER GAS FIRED, DRIVING A 3000 KW ELECTRIC GENERATOR, WITH AN EXHAUST HEAT RECOVERY STEAM GENERATOR, 6,010,200 BTU/HR CAPACITY, UNFIRED.

**APPLICATION NO. 480916**

RESOURCE RECOVERY SYSTEM NO. 5 CONSISTING OF:

INTERNAL COMBUSTION ENGINE (CG5-HB), COOPER BESSMER, SPARK IGNITION, FOUR STROKE, WITH A MODIFIED TURBOCHARGED-INTERCOOLED V-16 TYPE, MODEL NO. LSVB-16-SGC, 4166 HP, NATURAL GAS AND/OR DIGESTER GAS FIRED, DRIVING A 3000 KW ELECTRIC GENERATOR, WITH AN EXHAUST HEAT RECOVERY STEAM GENERATOR, 6,010,200 BTU/HR CAPACITY, UNFIRED.

**Conditions:** (A/N 480908, 480909, 480911, 480912 and 480916)

1. OPERATION OF THIS EQUIPMENT SHALL BE CONDUCTED IN ACCORDANCE WITH ALL DATA AND SPECIFICATIONS SUBMITTED WITH THE APPLICATION UNDER WHICH THIS PERMIT IS ISSUED UNLESS OTHERWISE NOTED BELOW.
   [RULE 204]

2. THIS EQUIPMENT SHALL BE PROPERLY MAINTAINED AND KEPT IN GOOD OPERATING CONDITION AT ALL TIMES.
   [RULE 204]

3. THIS EQUIPMENT SHALL BE OPERATED BY PERSONNEL PROPERLY TRAINED IN ITS OPERATION.
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4. THIS ENGINE SHALL HAVE AN OPERATIONAL NON-RESETTABLE TOTALIZING TIME METER TO DETERMINE THE ENGINE ELAPSED OPERATING TIME FOR EACH FUEL BLEND BURNED.
   [RULE 1110.2]

5. A FLOW INDICATING AND RECORDING DEVICE SHALL BE INSTALLED IN THE FUEL GAS, OR FUEL BLEND, SUPPLY LINE TO THE ENGINE TO MEASURE AND RECORD THE QUANTITY OF EACH FUEL GAS (IN SCFM) BURNED.
   [RULE 204]

6. SAMPLING PORT SHALL BE INSTALLED FOR THE INLET GAS LINE TO THE ENGINE TO ALLOW THE COLLECTION OF A FUEL GAS OR FUEL BLEND SAMPLES.
   [RULE 204]

7. MONTHLY READINGS OF THE BTU CONTENT OF FUEL GAS (BTU/SCF) AT THE COMBINED INLET TO THE CGS ENGINES SHALL BE TAKEN USING AN INSTRUMENT APPROVED BY THE SCAQMD. ALL RESULTS SHALL BE RECORDED.
[RULE 204]

8. ALL RECORDING DEVICES SHALL BE SYNCHRONIZED WITH RESPECT TO THE TIME OF THE DAY.
[RULE 204]

9. THE TOTAL HEAT INPUT OF GASEOUS FUEL, OR FUEL BLEND, BURNED IN THIS ENGINE SHALL NOT EXCEED 33 MM BTU PER HOUR. A LOG SHALL BE KEPT INDICATING THE TOTAL HEATING VALUE OF FUEL GAS, OR FUEL BLEND, BURNED IN THIS ENGINE BASED ON THE RECORDED FLOW RATE (SCFM) AND THE LATEST MONTHLY BTU CONTENT READING.
[RULE 1303 (b) (1) AND 1303 (b) (2)-MODELING AND EMISSIONS OFFSET]

10. THIS EQUIPMENT SHALL BE OPERATED IN COMPLIANCE WITH RULES 218, 431.1 AND 1110.2.
[RULE 218, 431.1 AND 1110.2]

11. THIS EQUIPMENT SHALL BE OPERATED IN SUCH A MANNER THAT THE FOLLOWING EMISSION RATES ARE NOT EXCEED.

| AIR CONTAMINANT | |
|---|---|
| CARBON MONOXIDE | 600 PPMV AT 15% O2 |
| PARTICULATES (PM10) | 0.0058 GRAINS/ DSCF |
| ROG OR TNMHC (AS CARBON) | 93 PPMV AT 15% O2 |

[RULE 1303 (a) (1), 1303(b) (1) AND 1303 (b) (2)-BACT, MODELING AND EMISSIONS OFFSET]

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| CARBON MONOXIDE | 2,644 |
| NITROGEN OXIDES (AS NO2) | 828 |
| PARTICULATES (PM10) | 72 |
| ROG OR TNMHC (AS CH4) | 372 |
| SULFUR DIOXIDE | 84 |

[RULE 1303 (b) (2)-EMISSIONS OFFSET]

13. THE OPERATOR SHALL INSTALL AND MAINTAIN A CONTINUOUS EMISSION MONITORING SYSTEM (CEMS), OR AN ALTERNATIVE SYSTEM, AS APPROVED BY THE EXECUTIVE OFFICER, TO MEASURE THE ENGINE EXHAUST FOR NOx AND O2 CONCENTRATIONS ON A DRY BASIS, EXCEPT DURING SHUTDOWN FOR MAINTENANCE OF THE SYSTEM. IN ADDITION, THE CEMS SHALL CONVERT THE ACTUAL NOx TO MASS EMISSION RATES; AND RECORD THE ACTUAL AND CORRECTED ENGINE NOx CONCENTRATION AT 15% O2 AND MASS EMISSION RATES ON AN HOURLY AND DAILY BASIS.
[RULE 218, RULE 1110.2]

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A. TOTAL NON-METHANE HYDROCARBONS (EXHAUST ONLY)
B. CARBON MONOXIDE (EXHAUST ONLY)
C. TOTAL PARTICULATE MATTER (EXHAUST ONLY).
D. OXIDES OF NITROGEN (EXHAUST ONLY).
E. OXYGEN
F. FLOW RATE
G. MOISTURE
H. TOXIC AIR CONTAMINANTS (EXHAUST ONLY), FOR ONE ENGINE PER YEAR
I. ALDEHYDES (EXHAUST ONLY), FOR ONE ENGINE PER YEAR
J. TOTAL REDUCED SULFUR COMPOUNDS (FUEL ONLY)
K. NITROGEN AND CARBON DIOXIDE
L. BTU CONTENTS (FUEL ONLY)
M. POWER OUTPUT

[RULE 1303(b) (1) AND 1303(b) (2) - MODELING AND EMISSION OFFSET], [RULE 1110.2], [RULE 404]

15 RECORDS SHALL BE KEPT AND MAINTAINED TO PROVE COMPLIANCE WITH ALL CONDITIONS FOR THIS PERMIT. THE RECORDS SHALL BE KEPT ON FILE FOR AT LEAST FIVE YEARS AND SHALL BE MADE AVAILABLE TO AQMD PERSONNEL UPON REQUEST.
[RULE 204]

**EMISSIONS AND REQUIREMENTS:**

16. THIS EQUIPMENT IS SUBJECT TO THE APPLICABLE REQUIREMENTS OF THE FOLLOWING RULES AND REGULATIONS:

CO: 2000 PPMV, RULE 1110.2
NOX: 45.4 PPMV, RULE 1110.2 (WITH 1.26 ECF ADJUSTMENT FACTOR)
ROG: 315 PPMV, RULE 1110.2 (WITH 1.26 ECF ADJUSTMENT FACTOR)
PM: RULE 404, SEE APPENDIX B FOR EMISSION LIMITS

**BACKGROUND:**

On April 4, 2008, the above A/Ns 4890908, 909, 911, 912 & 916 (identical equipment) were submitted by the Orange County sanitation District (OCSD) for change of condition for NOx and VOC emission concentrations, per Rule 1110.2 (d) (1) ( C ), amended February 1, 2008. For these applications, OCSD has also requested in their submittal letter (March 27, 2008) to allow greater than 10% natural gas usage for these biogas engines. OCSD has proposed to allow up to 25% natural gas. Each identical equipment is part of the Central generation System (CGS), spark-ignited internal combustion engine, located at Huntington Beach, Plant No. 2.

Based on past conversations with OCSD staff, on February 12, 2009, OCSD has informed to process these applications for ECF based concentration limits to expedite permit issuance (see e-mail correspondences of 2/11 and 2/12/09 from OCSD). Therefore, these applications are not evaluated for initial request of >10% NG usage at this time. OCSD was informed to file separate applications, in future, if >10% NG usage is needed for these CGS engines to comply with Rule 1110.2 requirements.

This is a Title V facility and initial Title V facility permit was issued that became effective January 12, 2009. Application for Title V permit revision is submitted.

**PROCESS DESCRIPTION**:

On 01/12/2009, initial Title V permit was issued.
Title V facility permit contained reissued permits, that superseded previous permits issued on 7/08/2008. The following are the most recent permits granted for the above engines,

R-96019 / A/N 414653 (CG1-HB)
R-96020 / A/N 414654 (CG2-HB)
R-96021 / A/N 414655 (CG3-HB)
R-96022 / A/N 414656 (CG4-HB)
R-96023 / A/N 414657 (CG5-HB)

To comply with Rule (d) (1) ( C ), Table III, Emission Correction factor (ECF) based concentrations, OCSD had conducted required source tests [Per R1110.2 (d) (1) ( C ) (i) and (ii)] for each engine during June and July 2008. The tests were conducted by SCEC and Advanced Engine Technologies Corp. (AETC) as required under R1110.2 (ASME Performance Test Code PTC 17-1973) for high, medium and low load, and average values determined for NOx, VOC and ECF (see summary results tables in folder).

Average results from three different loads are summarized below,

| **CGS Engines** | **Units** | **No. 1** | **No. 2** | **No. 3** | **No. 4** | **No. 5** |
|---|---|---|---|---|---|---|
| **Exhaust Flow Rate** | DSCFM | 10,230 | 9,751 | 10,634 | 10,822 | 9,559 |
| **$O_2$** | %O2 | 12.21 | 12.01 | 12.44 | 12.47 | 12.20 |
| **$NO_x$** | ppmvd @ 15% O2 | 28.2 | 23.4 | 22.6 | 23.6 | 22.4 |
| **TNMOC** | ppmvd @ 15% O2 | 97.5 | 93.3 | 34.1 ? | 74.3 | N/A |
| CO (for information) | ppmvd @ 15% O2 | 440.3 | 420.6 | ? | 514.5 | 457.3 |
| **Measured $Q_a$** | Btu/Bhp-hr | 7438.3 | 7403.7 | 7,403.3 | 7789.2 | 6838.7 |
| **ECF = 9250 / $Q_a$** | | 1.25 | 1.26 | 1.25 | 1.19 | 1.37 |

**EMISSION (ppmvd at 15% O2) :**

For these identical engines, average **ECF = 1. 26** will be used to determine ECF based emission (con.)

**$NO_x$** = 36 x 1.26 = **45.4 ppmvd**

**TNMOC** (VOC) = 250 x 1.26 = **315 ppmvd**

CO concentration limit is kept as before as no ECF adjustment is required..

New Condition No. 11 is added to the existing engines' permits. Revised Condition No. 12.

Mass emissions are kept same as under previous permit(s);
CO = 27.6 lbs/hr
NOx = 8.52 lbs/hr
PM10 = 0.75 lbs/hr
ROG = 3.87 lbs/hr
SOx = 0.87 lbs/hr

**RULES EVALUATION:**

Compliance with all applicable rules and regulations is expected.
NOx and VOC concentration limits, based on ECF, are imposed, Condition No. 11, per Rule 1110.2 (d) (1) ( C ).

**RECOMMENDATION**:

Permit to operate for the proposed change of condition for each engine is recommended with above listed conditions.

## Gaurang Rawal

**From:** Gaurang Rawal
**Sent:** Thursday, February 12, 2009 3:36 PM
**To:** Kogan, Vlad
**Cc:** Ahn, Terry
**Subject:** RE: Plant 2 CGS

Vlad,

This is to confirm my understanding, based on our previous conversations, that the Plant 2 applications for change of condition is for ECF only and will be processed accordingly. Therefore, initial request for >10% natural gas usage for the CGS engines is not evaluated. Any future requirements for >10% natural gas usage under Rule 1110.2 shall be addressed in separate applications.

Regards,

Gaurang Rawal
Air Quality Engineer
Refinery & Waste Management
South Coast A.Q.M. D.
21865 Copley Drive
Diamond Bar, CA 91765
grawal@aqmd.gov
Ph: (909) 396-2543
FAX: (909) 396-3341

-----Original Message-----
**From:** Kogan, Vlad
**Sent:** Thursday, February 12, 2009 2:45 PM
**To:** Gaurang Rawal
**Cc:** Ahn, Terry
**Subject:** FW: Plant 2 CGS

Gaurang,

This e-mail is to confirm our telephone conversation today. Please proceed with our request to include ECF in the permits for Plant 2 CGS engines. The corresponding Title V request for the minor permit revision will be submitted to you shortly. Please contact me or Terry if you have questions. Thanks,
VK

**From:** Kogan, Vladimir
**Sent:** Wednesday, February 11, 2009 1:44 PM
**To:** Gaurang Rawal
**Subject:** FW: Plant 2CGS

Hi Gaurang,

Based on the response I received from our CGS operating people we might agree on the temporary removal of the request to increase natural gas ratio in Plant 2 fuel blend from 10 to 25% as soon as our request to include ECF in our CGS emission limits containing in the same application is processed without further delays. We reserve the right to continue with our request to increase the natural gas concentration as stated in the R1110.

Please contact me if you have questions. Thanks,
VK

**From:** Halverson, David (O&M)

**Sent:** Thursday, February 05, 2009 11:19 AM
**To:** Kogan, Vladimir; Thompson, Rob; Van Voorst, Don
**Cc:** Ahn, Terry; Rothbart, Lisa
**Subject:** RE: Plant 2CGS

Don and his staff have succeeded in creating procedures to limit the natural gas use and have been successful for the last couple of months in keeping it below 10%. There will be some increased testing associated with the CEMS replacement project but I assume that natural gas usage is not counted toward the 100% limit.

We are OK with removing this exception request for natural gas usage.

Dave

## Gaurang Rawal

**From:** Kogan, Vlad
**Sent:** Monday, January 19, 2009 3:20 PM
**To:** Gaurang Rawal
**Subject:** FW: Engines Source testing. Facilities ID 017301 abd 029110.

Hi Gaurang,

Maybe it is just a miscommunication but I believe that you have already seen our ECF results and the corresponding testing information. Just in case4 I'm forwarding you it once more.

The testing was conducted by the well-known company – SCEC from Orange, CA (Mike Bell – 714-282-8240). They are working at the majority of our source testing. I believe that Charlie is familiar with the company and its work. They are accredited by SCAQMD.

The ECF part of the testing was run by also very well-known company AETC (Advanced Engine Technologies Corp.) fr San Leandro, CA. they are supreme authorities on this issue. Their president Greg Beshouri (510-614-6340) – is also well-known to everybody in the engines business.

Please contact me if other information is required.

Do we still need to submit a Title V minor permit revision application?

Thanks,
VK

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**From:** Kogan, Vladimir
**Sent:** Thursday, July 31, 2008 3:33 PM
**To:** 'Charles Tupac'
**Cc:** 'ADejbahsh@aqmd.gov'; Gaurang Rawal
**Subject:** Engines Source testing. Facilities ID 017301 abd 029110.

L r Mr. Tupac,

Enclosed please find the results of source testing of the Orange County Sanitation District (OCSD) Central Power Generator Systems (CGS) Internal Combustion Engines (ICE). Plant No.1 (ID No. 017301) is located in Fountain Valley CA and operates three ICE (A/N 414648, 414649, 414651). Plant No. 2 is located in Huntington Beach, CA (ID No. 029110) and operates five ICE (A/N 414653 to 414657). The testing was conducted in accordance with the requirements of paragraph (f)(1)(C) SCAQMD Rule 1110.2. Full source testing reports are located in this office and will be submitted to you upon request. Please note that that the enclosed source testing was not conducted to comply with the requirements of permits to operate for the engines. The results of the compliance source testing will be submitted to you separately.

Enclosed also are the results of testing and calculation of the Efficiency Correction Factors (ECF) for these engines. The determination of the ECFs is required by the paragraph (d)(1)(C) of the Rule 1110.2. The applications for incorporation of the ECFs in the permit conditions together with the applicable fees were submitted to SCAQMD on March 30, 2008 (Plant 2) and on July 30, 2008 (Plant 1).

If you have questions or further information is required please contact me at 714-593-7085 (vkogan@OCSD.com).

Regards,

VK

## Gaurang Rawal

**From:** Kogan, Vlad
**Sent:** Tuesday, January 13, 2009 5:19 PM
**To:** Gaurang Rawal
**Subject:** FW: CGS issues

Gaurang,

I'm sorry, but it is absolutely necessary for us to receive a positive response to my e-mail from 1/6/09. As You know, we are Title V facility right now and should report any non-compliance. Our engines often operate at 40+ ppm of NOx that is OK with the ECF (e.g. 36 ppm x 1.3=46.8). But without approved ECFs that we submitted back in July 2007 we are not sure that such calculations can be used. Still, we do not have other choice than continue operating the engines under the assumption that our ECFs are confirmed per Rule 1110.2.

The issue of operating at more than 10% natural gas is less burning at the current mode. Still, when flares were monthly tested we didn't have enough di-gas at Plant 2 and were forced to operate engines at more than 10% natural g It will happen once every 1.5 months or so. Other possibilities of violating this R1110.2 provisions are also might happen.

So we really need your response asap and even faster. If you think that Charlie/Amir should be involved, please let me know (or transfer this e-mail to them)

Please contact me if you have questions. Thanks,
VK

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**From:** Kogan, Vladimir
**Sent:** Tuesday, January 06, 2009 2:41 PM
**To:** Gaurang Rawal
**Cc:** Ahn, Terry; Rothbart, Lisa
**Subject:** CGS issues

Gaurang,

What is a situation with our application for including ECF to our engines emissions data? We submitted the application with the testing result back in July 2008. Can we use these results for calculation the compliance with NOx emission limits (e.g. consider these limits at 43-45 ppm and not at 36 ppm)?. Another issue is a permission to run the engines at more than 10% of di-gas. We submitted the application as specified by the Rule 1110.2 almost a year ago. As you understand, we are running engines at almost 100% di-gas but during the flares testing we might not be able to run the engines at 100% di-gas for a short time. In both examples such events are very rare and short-time but being a Title V facilities we'd like to avoid such situations completely. Thanks,
VK

Vlad Kogan
Senior Scientist
Environmental Compliance Division
Orange County Sanitation District
Tel: 714-593-7085
Fax: 714-962-8379

**TABLE 1.1**
**SUMMARY OF RESULTS SCAQMD RULE 1110.2 PTC 17 & 8760 HOUR TEST**
**OCSD PLANT 2**
**ENGINE #1**
**July 9 & 10, 2008**

| Parameter | Units | High Load | Medium Load | Low Load | Average |
|---|---|---|---|---|---|
| $NO_X$ | ppmvd | 49.8 | 39.6 | 35.6 | 41.7 |
| | ppmvd @ 15% $O_2$ | 33.1 | 26.7 | 24.9 | 28.2 |
| | lb/hr | 4.02 | 2.79 | 2.58 | 3.13 |
| | lb/day | 96.5 | 66.9 | 61.8 | 75.1 |
| CO | ppmvd | 597.5 | 641.8 | 703.7 | 647.6 |
| | ppmvd @ 15% $O_2$ | 396.5 | 432.9 | 491.5 | 440.3 |
| | lb/hr | 29.34 | 27.51 | 31.00 | 29.28 |
| | lb/day | 704.2 | 660.2 | 743.9 | 702.8 |
| TGNMEO [1] | ppmvd | - | 144.5 | - | 144.5 |
| | ppmvd @ 15% $O_2$ | - | 97.5 | - | 97.5 |
| | lb/hr | - | 2.65 | - | 2.65 |
| | lb/day | - | 63.7 | - | 63.7 |
| $O_2$ | % | 12.01 | 12.15 | 12.45 | 12.21 |
| $CO_2$ | % | 7.31 | 7.42 | 7.08 | 7.27 |
| Measured $Q_a$ | BTU/BHP-HR | 7,071 | 7,110 | 8,134 | 7,438.3 |
| ECF | - | 1.308 | 1.301 | 1.137 | 1.249 |
| Load | KW | 2,883.0 | 2,448.0 | 2,130.0 | 2,487.0 |
| | % | 96.1 | 81.6 | 71.0 | 82.9 |
| Volume Flow Rate | DSCFM | 11,079 | 9,671 | 9,938 | 10,230 |

[1] One Method 25.1 Tray (duplicate samples) was collected at average load. Results are the average of both samples.

**OCSD Emissions & Performance Test**
**Manual Data Recording**

| | | | | |
|---|---|---|---|---|
| Date | 7/9/08 | | | |
| LSVB16 Unit | 1 | | | |
| Time | 13:55 | 14:57 | 7:28 | Average |
| ***Generator Data*** | | | | |
| | 1 | 2 | 3 | |
| Amps A: | 126 | 163 | 145 | |
| Amps B: | 125 | 161 | 145 | |
| Amps C: | 125 | 161 | 144 | |
| Voltage (KV): | 12.3 | 12.3 | 12.3 | |
| Power Factor: | 0.80 | 0.82 | 0.80 | |
| **Factory Generator Efficiency (%):** | 96.36 | 96.58 | 96.50 | |
| **Power Output (KW):** | 2130 | 2883 | 2448 | **2487** |
| **Power Output (BHP):** | 2964 | 4003 | 3401 | **3456** |
| ***Fuel Flow Meter Data*** | | | | |
| DI-GAS Fuel Flow (SCFM): | 633 | 741 | 685 | |
| NAT-GAS Fuel Flow (SCFM): | 44.7 | 53.7 | 13.7 | |
| **Calc. BSFC(BTU/BHP.Hr):** | **8134** | **7071** | **7110** | **7438** |
| **Calc. BSFC(BTU/KW.Hr):** | **11316** | **9816** | **9876** | **10336** |
| ***Emissions Data*** | | | | |
| RM NOx: | 37.3 | 50.5 | 40.1 | |
| RM O2: | 12.4% | 12.0% | 12.1% | |
| Calc. RM NOx @15%O2: | 25.8 | 33.6 | 27.0 | **28.8** |
| RM CO (ppm): | 689 | 588 | 634 | |
| RM CO2 (%): | 6.89 | 7.28 | 7.35 | |
| **NOx (lbm/Hr):** | 2.68 | 4.10 | 2.82 | **3.20** |
| **CO (lbm/Hr):** | 30.16 | 29.06 | 27.09 | **28.8** |
| **BSNOx (g/BHP.Hr):** | 0.41 | 0.46 | 0.38 | **0.42** |
| **BSCO (g/BHP.Hr):** | 4.62 | 3.29 | 3.61 | **3.84** |
| **BSNOx (g/KW.Hr):** | **0.57** | **0.64** | **0.52** | **0.58** |
| **BSCO (g/KW.Hr):** | **6.42** | **4.57** | **5.02** | **5.34** |
| ***Engine Data*** | | | | |
| Speed (RPM): | 360 | 360 | 360 | |
| AMP ("Hg): | 14.9 | 24.8 | 19.1 | |
| AMT (F): | 99.0 | 101.7 | 99.0 | |
| Load (%): | 71% | 96% | 82% | |
| Turbo Speed (RPM): | 10524 | 12963 | 11583 | |
| Jacket Water Temp. IN (F): | 169 | 170 | 168 | |
| Jacket Water Temp. OUT (F): | 176 | 178 | 177 | |
| Ambient Temp. (F): | 88 | 88 | 68 | |
| Barometric pressure ("Hg): | 30.09 | 30.09 | 30.07 | |
| Relative Humidity (%): | 58% | 58% | 84% | |
| Turbo Air Inlet Temp. (F): | 76.6 | 76.6 | 73.2 | |

**AUTO-RECORDING SUMMARY**
**OCSD Standard Form**

| | | | | |
|---|---|---|---|---|
| Plant | 2 | | | |
| Engine | 1 | | | |
| Date | 7/9/08 | | | |
| Time | 13:55 | 14:57 | 7:28 | Average |
| ***Engine Data*** | | | | |
| SPEED (rpm): | 360.0 | 360.0 | 360.0 | |
| Torque (%): | 70% | 96% | 81% | |
| Output (bhp): | 2934 | 3989 | 3374 | **3432** |
| AMP ("Hg): | 15.0 | 24.6 | 18.9 | |
| PGP (PSI): | 21.1 | 30.8 | 25.2 | |
| PDP (PSI): | 13.8 | 18.8 | 15.9 | |
| AMT (deg F): | 98.8 | 101.6 | 99.2 | |
| IT (deg BTDC): | 9.4 | 9.4 | 9.7 | |
| ***Engine Performance*** | | | | |
| NG Fuel Flow (SCFM): | 46.9 | 53.8 | 11.5 | |
| DG Fuel Flow (SCFM): | 610.8 | 807.6 | 750.6 | |
| LHV Blend Ratio: | 89% | 90% | 98% | |
| BSFC (BTU/BHP-HR): | 7999 | 7666 | 7797 | **7821** |
| NOx MASS FLOW (lbm/HR): | 2.51 | 4.35 | 3.04 | **3.30** |
| CO MASS FLOW (lbm/HR): | 30.2 | 31.8 | 30.0 | **30.6** |
| BS NOx (g/BHP-HR): | 0.388 | 0.495 | 0.408 | **0.431** |
| BS CO (g/BHP-HR): | 4.67 | 3.61 | 4.03 | **4.10** |
| ***Emissions Data*** | | | | |
| RM NOx (ppm): | 35.6 | 49.8 | 39.6 | |
| RM O2 (%): | 12.5% | 12.0% | 12.2% | |
| RM NOx @15%O2: | 24.9 | 33.1 | 26.7 | **28.20** |
| RM CO (ppm): | 704 | 598 | 642 | |
| RM CO @15%O2 | 491 | 397 | 433 | **440** |
| ***Combustion Data*** | | | | |
| Engine Avg PP (psi): | 757 | 974 | 852 | |
| Engine Avg LOPP (deg. ATDC): | 16.1 | 17.0 | 16.7 | |
| Engine Avg Std Dev. PP(psi): | 23 | 31 | 27 | |
| Engine Exhaust Temp.(F): | 835 | 873 | 855 | |

**TABLE 1.2**
**SUMMARY OF RESULTS SCAQMD RULE 1110.2 PTC 17 & 8760 HOUR TEST**
**OCSD PLANT 2**
**ENGINE#2**
**June 18, 2008 (Low and High Load) & July 10, 2008 (Medium Load)**

| Parameter | Units | High Load | Medium Load | Low Load | Average |
|---|---|---|---|---|---|
| $NO_X$ | ppmvd | 39.7 | 37.8 | 28.8 | 35.4 |
| | ppmvd @ 15% $O_2$ | 26.3 | 24.1 | 20.0 | 23.4 |
| | lb/hr | 3.13 | 2.47 | 1.98 | 2.53 |
| | lb/day | 75.2 | 59.3 | 47.5 | 60.6 |
| CO | ppmvd | 586.6 | 594.4 | 712.4 | 631.1 |
| | ppmvd @ 15% $O_2$ | 388.6 | 378.6 | 494.6 | 420.6 |
| | lb/hr | 28.18 | 23.63 | 29.82 | 27.21 |
| | lb/day | 676.4 | 567.1 | 715.8 | 653.1 |
| TGNMEO [1] | ppmvd | - | 146.5 | - | 146.5 |
| | ppmvd @ 15% $O_2$ | - | 93.3 | - | 93.3 |
| | lb/hr | - | 2.50 | - | 2.50 |
| | lb/day | - | 59.9 | - | 59.9 |
| $O_2$ | % | 11.99 | 11.64 | 12.40 | 12.01 |
| $CO_2$ | % | 6.99 | 7.79 | 6.83 | 7.20 |
| Measured $Q_a$ | BTU/BHP-HR | 6,969 | 6,730 | 8,512 | 7,403.7 |
| ECF | - | 1.327 | 1.374 | 1.087 | 1.263 |
| Load | KW | 2,887.0 | 2,538.0 | 1,975.0 | 2,466.7 |
| | % | 96.2 | 84.6 | 65.8 | 82.2 |
| Volume Flow Rate | DSCFM | 10,838 | 8,970 | 9,445 | 9,751 |

[1] One Method 25.1 Tray (duplicate samples) was collected at average load. Results are the average of both samples.

# FACILITY PERMIT TO OPERATE
# ORANGE COUNTY SANITATION DISTRICT

Existing PO

## PERMIT TO OPERATE

**Permit No. R-F96019**
**A/N 414653**

**Equipment Description:**

RESOURCE RECOVERY SYSTEM NO. 1 CONSISTING OF:

INTERNAL COMBUSTION ENGINE (CG1-HB), COOPER BESSMER, SPARK IGNITION, FOUR STROKE, WITH A MODIFIED TURBOCHARGED-INTERCOOLED V-16 TYPE, MODEL NO. LSVB-16-SGC, 4166 HP, NATURAL GAS AND/OR DIGESTER GAS FIRED, DRIVING A 3000 KW ELECTRIC GENERATOR, WITH AN EXHAUST HEAT RECOVERY STEAM GENERATOR, 6,010,200 BTU/HR CAPACITY, UNFIRED.

**Conditions:**

1. OPERATION OF THIS EQUIPMENT SHALL BE CONDUCTED IN ACCORDANCE WITH ALL DATA AND SPECIFICATIONS SUBMITTED WITH THE APPLICATION UNDER WHICH THIS PERMIT IS ISSUED UNLESS OTHERWISE NOTED BELOW.
   [RULE 204]

2. THIS EQUIPMENT SHALL BE PROPERLY MAINTAINED AND KEPT IN GOOD OPERATING CONDITION AT ALL TINES.
   [RULE 204]

3. THIS EQUIPMENT SHALL BE OPERATED BY PERSONNEL PROPERLY TRAINED IN ITS OPERATION.
   [RULE 204]

4. THIS ENGINE SHALL HAVE AN OPERATIONAL NON-RESETTABLE TOTALIZING TIME METER TO DETERMINE THE ENGINE ELAPSED OPERATING TIME FOR EACH FUEL BLEND BURNED.
   [RULE 1110.2]

5. A FLOW INDICATING AND RECORDING DEVICE SHALL BE INSTALLED IN THE FUEL GAS, OR FUEL BLEND, SUPPLY LINE TO THE ENGINE TO MEASURE AND RECORD THE QUANTITY OF EACH FUEL GAS (IN SCFM) BURNED.
   [RULE 204]

6. SAMPLING PORT SHALL BE INSTALLED FOR THE INLET GAS LINE TO THE ENGINE TO ALLOW THE COLLECTION OF A FUEL GAS OR FUEL BLEND SAMPLES.
   [RULE 204]

7. MONTHLY READINGS OF THE BTU CONTENT OF FUEL GAS (BTU/SCF) AT THE COMBINED INLET TO THE CGS ENGINES SHALL BE TAKEN USING AN INSTRUMENT APPROVED BY THE SCAQMD. ALL RESULTS SHALL BE RECORDED.
   [RULE 204]

# FACILITY PERMIT TO OPERATE
# ORANGE COUNTY SANITATION DISTRICT

8. ALL RECORDING DEVICES SHALL BE SYNCHRONIZED WITH RESPECT TO THE TIME OF THE DAY. [RULE 204]

9. THE TOTAL HEAT INPUT OF GASEOUS FUEL, OR FUEL BLEND, BURNED IN THIS ENGINE SHALL NOT EXCEED 33 MM BTU PER HOUR. A LOG SHALL BE KEPT INDICATING THE TOTAL HEATING VALUE OF FUEL GAS, OR FUEL BLEND, BURNED IN THIS ENGINE BASED ON THE RECORDED FLOW RATE (SCFM) AND THE LATEST MONTHLY BTU CONTENT READING.
[RULE 1303 (b) (1) AND 1303 (b) (2)-MODELING AND EMISSIONS OFFSET]

10. THIS EQUIPMENT SHALL BE OPERATED IN COMPLIANCE WITH RULES 218, 431.1 AND 1110.2.
[RULE 218, 431.1 AND 1110.2]

11. THIS EQUIPMENT SHALL BE OPERATED IN SUCH A MANNER THAT THE FOLLOWING EMISSION RATES ARE NOT EXCEED.

| AIR CONTAMINANT | |
|---|---|
| CARBON MONOXIDE | 600 PPMV AT 15% O2 |
| PARTICULATES (PM10) | 0.0058 GRAINS/ DSCF |
| ROG OR TNMHC (AS CARBON) | 93 PPMV AT 15% O2 |

[RULE 1303 (a) (1), 1303(b) (1) AND 1303 (b) (2)-BACT, MODELING AND EMISSIONS OFFSET]

12. THE COMBINED EMISSIONS FROM THE FIVE (5) CGS ENGINES, USING CALENDAR MONTHLY EMISSIONS DIVIDED BY 30, SHALL NOT EXCEED THE FOLLOWING:

| AIR CONTAMINANT | LBS/DAY |
|---|---|
| CARBON MONOXIDE | 2,644 |
| NITROGEN OXIDES (AS NO2) | 828 |
| PARTICULATES (PM10) | 72 |
| ROG OR TNMHC (AS CH4) | 372 |
| SULFUR DIOXIDE | 84 |

[RULE 1303 (b) (2)-EMISSIONS OFFSET]

13. THE OPERATOR SHALL INSTALL AND MAINTAIN A CONTINUOUS EMISSION MONITORING SYSTEM (CEMS), OR AN ALTERNATIVE SYSTEM, AS APPROVED BY THE EXECUTIVE OFFICER, TO MEASURE THE ENGINE EXHAUST FOR NOx AND O2 CONCENTRATIONS ON A DRY BASIS, EXCEPT DURING SHUTDOWN FOR MAINTENANCE OF THE SYSTEM. IN ADDITION, THE CEMS SHALL CONVERT THE ACTUAL NOx TO MASS EMISSION RATES; AND RECORD THE ACTUAL AND CORRECTED ENGINE NOx CONCENTRATION AT 15% O2 AND MASS EMISSION RATES ON AN HOURLY AND DAILY BASIS.
[RULE 218, RULE 1110.2]

14. THE OPERATOR SHALL CONDUCT PERFORMANCE TESTS ANNUALLY. WRITTEN NOTICE OF THE PERFORMANCE TEST SHALL BE PROVIDED TO THE AQMD AT LEAST 7 DAYS PRIOR TO THE TEST SO THAT AN OBSERVER MAY BE PRESENT. A COMPLETE FINAL REPORT OF THE TEST (LBS/HR, PPMVD AT 15% O2, LBS/MMBTU, ETC.) SHALL BE PROVIDED TO THE AQMD WITHIN 45 DAYS AFTER TESTING. ALL TEST RUNS REQUIRED BY AQMD SHALL BE REPORTED. THE TESTS SHALL INCLUDE BUT NOT BE LIMITED TO, A TEST OF THE FUELS BURNED AND ENGINE EXHAUST FOR:

# FACILITY PERMIT TO OPERATE
# ORANGE COUNTY SANITATION DISTRICT

A. TOTAL NON-METHANE HYDROCARBONS
B. CARBON MONOXIDE (EXHAUST ONLY)
C. TOTAL PARTICULATE MATTER (EXHAUST ONLY).
D. OXIDES OF NITROGEN (EXHAUST ONLY).
E. OXYGEN
F. FLOW RATE
G. MOISTURE
H. TOXIC AIR CONTAMINANTS, FOR ONE ENGINE PER YEAR
I. ALDEHYDES (EXHAUST ONLY), FOR ONE ENGINE PER YEAR
J. TOTAL REDUCED SULFUR COMPOUNDS (INLET)
K. NITROGEN AND CARBON DIOXIDE
L. BTU CONTENTS (INLET)
M. POWER OUTPUT.

[RULE 1303(b) (1) AND 1303(b) (2) - MODELING AND EMISSION OFFSET], [RULE 1110.2], [RULE 404]

15 RECORDS SHALL BE KEPT AND MAINTAINED TO PROVE COMPLIANCE WITH ALL CONDITIONS FOR THIS PERMIT. THE RECORDS SHALL BE KEPT ON FILE FOR AT LEAST FIVE YEARS AND SHALL BE MADE AVAILABLE TO AQMD PERSONNEL UPON REQUEST.
[RULE 204]

**THIS PERMIT TO OPERATE R-F96019 SUPERSEDES PERMIT TO OPERATE F96019 ISSUED 7/07/2008.**

**Emissions And Requirements:**

THIS EQUIPMENT IS SUBJECT TO THE APPLICABLE REQUIREMENTS OF THE FOLLOWING RULES AND REGULATIONS:

16. CO: 2000 PPMV, RULE 1110.2
ROG: 250 PPMV, RULE 1110.2
NOx: 36 PPMV, RULE 1110.2
PM: RULE 404, SEE APPENDIX B FOR EMISSION LIMITS
SO2: 500 PPMV AS SO2, ORANGE COUNTY, RULE 53

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
21865 Copley Drive, Diamond Bar, CA 91765

# PERMIT TO OPERATE


Permit No.
R-F96019
A/N 414653

This initial permit must be renewed ANNUALLY unless the equipment is moved, or changes ownership.
If the billing for the annual renewal fee (Rule 301.f) is not received by the expiration date, contact the District.

Legal Owner
or Operator:

ORANGE COUNTY SANITATION DISTRICT
P O BOX 8127
FOUNTAIN VALLEY, CA 92728-8127

ID 29110
Command & control - format -

**Equipment Location:** 22212 BROOKHURST ST, HUNTINGTON BEACH, CA 92646-8457

**Equipment Description :**

RESOURCE RECOVERY SYSTEM NO. 1 CONSISTING OF:

INTERNAL COMBUSTION ENGINE (CG1-HB), COOPER BESSMER, SPARK IGNITION, FOUR STROKE, WITH A MODIFIED TURBOCHARGED-INTERCOOLED V-16 TYPE, MODEL NO. LSVB-16-SGC, 4166 HP, NATURAL GAS AND/OR DIGESTER GAS FIRED, DRIVING A 3000 KW ELECTRIC GENERATOR, WITH AN EXHAUST HEAT RECOVERY STEAM GENERATOR, 6,010,200 BTU/HR CAPACITY, UNFIRED.

**Conditions :**

1. OPERATION OF THIS EQUIPMENT SHALL BE CONDUCTED IN ACCORDANCE WITH ALL DATA AND SPECIFICATIONS SUBMITTED WITH THE APPLICATION UNDER WHICH THIS PERMIT IS ISSUED UNLESS OTHERWISE NOTED BELOW.

2. THIS EQUIPMENT SHALL BE PROPERLY MAINTAINED AND KEPT IN GOOD OPERATING CONDITION AT ALL TIMES.

3. THIS EQUIPMENT SHALL BE OPERATED BY PERSONNEL PROPERLY TRAINED IN ITS OPERATION.

4. THIS ENGINE SHALL HAVE AN OPERATIONAL NON-RESETTABLE TOTALIZING TIME METER TO DETERMINE THE ENGINE ELAPSED OPERATING TIME FOR EACH FUEL BLEND BURNED.

5. A FLOW INDICATING AND RECORDING DEVICE SHALL BE INSTALLED IN THE FUEL GAS, OR FUEL BLEND, SUPPLY LINE TO THE ENGINE TO MEASURE AND RECORD THE QUANTITY OF EACH FUEL GAS (IN SCFM) BURNED.

6. SAMPLING PORT SHALL BE INSTALLED FOR THE INLET GAS LINE TO THE ENGINE TO ALLOW THE COLLECTION OF A FUEL GAS OR FUEL BLEND SAMPLES.

7. MONTHLY READINGS OF THE BTU CONTENT OF FUEL GAS (BTU/SCF) AT THE COMBINED INLET TO THE CGS ENGINES SHALL BE TAKEN USING AN INSTRUMENT OR METHOD APPROVED BY THE SCAQMD. ALL RESULTS SHALL BE RECORDED.

8. ALL RECORDING DEVICES SHALL BE SYNCHRONIZED WITH RESPECT TO THE TIME OF THE DAY.

**FILE COPY**

9. THE TOTAL HEAT INPUT OF GASEOUS FUEL, OR FUEL BLEND, BURNED IN THIS ENGINE SHALL NOT EXCEED 33 MM BTU PER HOUR. A LOG SHALL BE KEPT INDICATING THE TOTAL HEATING VALUE OF FUEL GAS, OR FUEL BLEND, BURNED IN THIS ENGINE BASED ON THE RECORDED FLOW RATE (SCFM) AND THE LATEST WEEKLY BTU CONTENT READING.

10. THIS EQUIPMENT SHALL BE OPERATED IN COMPLIANCE WITH RULES 218, 431.1 AND RULE 1110.2.

11. THIS EQUIPMENT SHALL BE OPERATED IN SUCH A MANNER THAT THE FOLLOWING EMISSION RATES ARE NOT EXCEEDED

| AIR CONTAMINANT | |
|---|---|
| CARBON MONOXIDE | 600 PPMV AT 15% O2 |
| PARTICULATES (PM10) | 0.0058 GRAINS/DSCF |
| ROG OR TNMHC (AS CARBON) | 93 PPMV AT 15% O2 |

12. THE COMBINED EMISSIONS FROM THE FIVE (5) CGS ENGINES, USING CALENDAR MONTHLY EMISSIONS DIVIDED BY 30, SHALL NOT EXCEED THE FOLLOWING:

| AIR CONTAMINANT | LBS/DAY |
|---|---|
| CARBON MONOXIDE | 2,644 |
| NITROGEN OXIDES (AS NO2) | 828 |
| PARTICULATES (PM10) | 72 |
| ROG OR TNMHC (AS CH4) | 372 |
| SULFUR DIOXIDE | 84 |

13. THE OPERATOR SHALL INSTALL AND MAINTAIN A CONTINUOUS EMISSION MONITORING SYSTEM (CEMS), OR AN ALTERNATIVE SYSTEM, AS APPROVED BY THE EXECUTIVE OFFICER, TO MEASURE THE ENGINE EXHAUST FOR NOX AND O2 CONCENTRATIONS ON A DRY BASIS, EXCEPT DURING SHUTDOWN FOR MAINTENANCE OF THE SYSTEM. IN ADDITION, THE CEMS SHALL CONVERT THE ACTUAL NOX TO MASS EMISSION RATES; AND RECORD THE ACTUAL AND CORRECTED ENGINE NOX CONCENTRATION AT 15% O2 AND MASS EMISSION RATES ON AN HOURLY AND DAILY BASIS.

14. THE OPERATOR SHALL CONDUCT PERFORMANCE TESTS ANNUALLY. WRITTEN NOTICE OF THE PERFORMANCE TEST SHALL BE PROVIDED TO THE AQMD AT LEAST 7 DAYS PRIOR TO THE TEST SO THAT AN OBSERVER MAY BE PRESENT. A COMPLETE FINAL REPORT OF THE TEST (LBS/HR, PPMVD AT 15% O2, LBS/MMBTU, ETC.) SHALL BE PROVIDED TO THE AQMD WITHIN 45 DAYS AFTER TESTING. ALL TEST RUNS REQUIRED BY AQMD SHALL BE REPORTED. THE TESTS SHALL INCLUDE BUT NOT BE LIMITED TO, A TEST OF THE FUELS BURNED AND ENGINE EXHAUST FOR:

A. TOTAL NON-METHANE HYDROCARBONS
B. CARBON MONOXIDE (EXHAUST ONLY)

C. TOTAL PARTICULATE MATTER (EXHAUST ONLY).
D. OXIDES OF NITROGEN (EXHAUST ONLY).
E. OXYGEN
F. FLOW RATE
G. MOISTURE
H. TOXIC AIR CONTAMINANTS, FOR ONE ENGINE PER YEAR
I. ALDEHYDES (EXHAUST ONLY), FOR ONE ENGINE PER YEAR
J. TOTAL REDUCED SULFUR COMPOUNDS (INLET)
K. NITROGEN AND CARBON DIOXIDE
L. BTU CONTENTS (INLET)
M. POWER OUTPUT.

15. RECORDS SHALL BE KEPT AND MAINTAINED TO PROVE COMPLIANCE WITH ALL CONDITIONS FOR THIS PERMIT. THE RECORDS SHALL BE KEPT ON FILE FOR AT LEAST FIVE YEARS AND SHALL BE MADE AVAILABLE TO AQMD PERSONNEL UPON REQUEST.

**THIS PERMIT TO OPERATE R-F96019 SUPERSEDES PERMIT TO OPERATE F96019 ISSUED 3/20/2008**

**NOTICE**

IN ACCORDANCE WITH RULE 206, THIS PERMIT TO OPERATE OR COPY SHALL BE POSTED ON OR WITHIN 8 METERS OF THE EQUIPMENT.

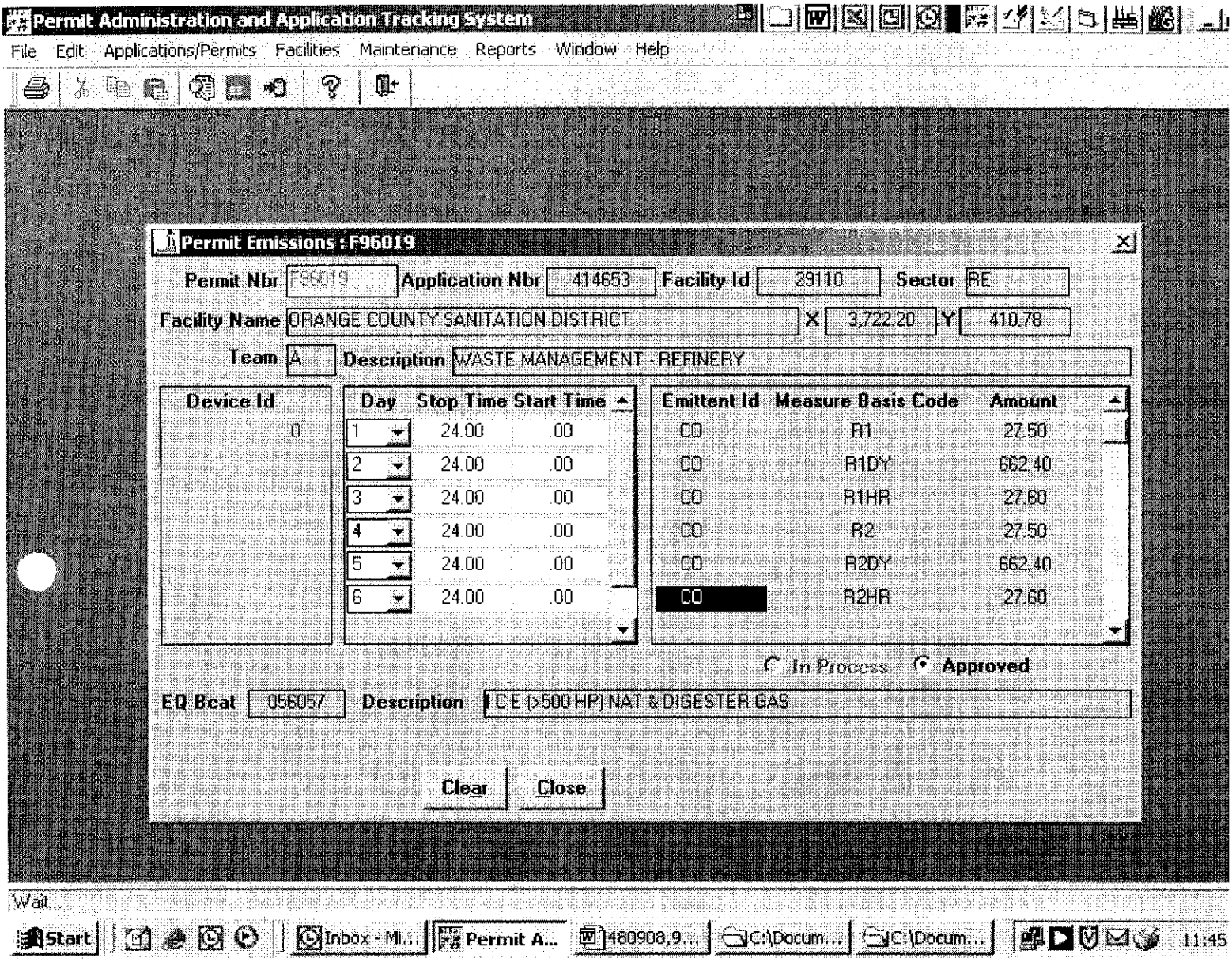
THIS PERMIT DOES NOT AUTHORIZE THE EMISSION OF AIR CONTAMINANTS IN EXCESS OF THOSE ALLOWED BY DIVISION 26 OF THE HEALTH AND SAFETY CODE OF THE STATE OF CALIFORNIA OR THE RULES OF THE AIR QUALITY MANAGEMENT DISTRICT. THIS PERMIT CANNOT BE CONSIDERED AS PERMISSION TO VIOLATE EXISTING LAWS, ORDINANCES, REGULATIONS OR STATUTES OF OTHER GOVERNMENT AGENCIES.

EXECUTIVE OFFICER

Dorris M Bailey

By Dorris M.Bailey/GR01
7/7/2008

**FILE COPY**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Team A Description WASTE MANAGEMENT - REFINERY
Device Id
0
Day Stop Time Start Time
1 24.00 .00
2 24.00 .00
3 24.00 .00
4 24.00 .00
5 24.00 .00
6 24.00 .00
Emittent Id Measure Basis Code Amount
CO R1 27.50
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CO R1HR 27.60
CO R2 27.50
CO R2DY 662.40
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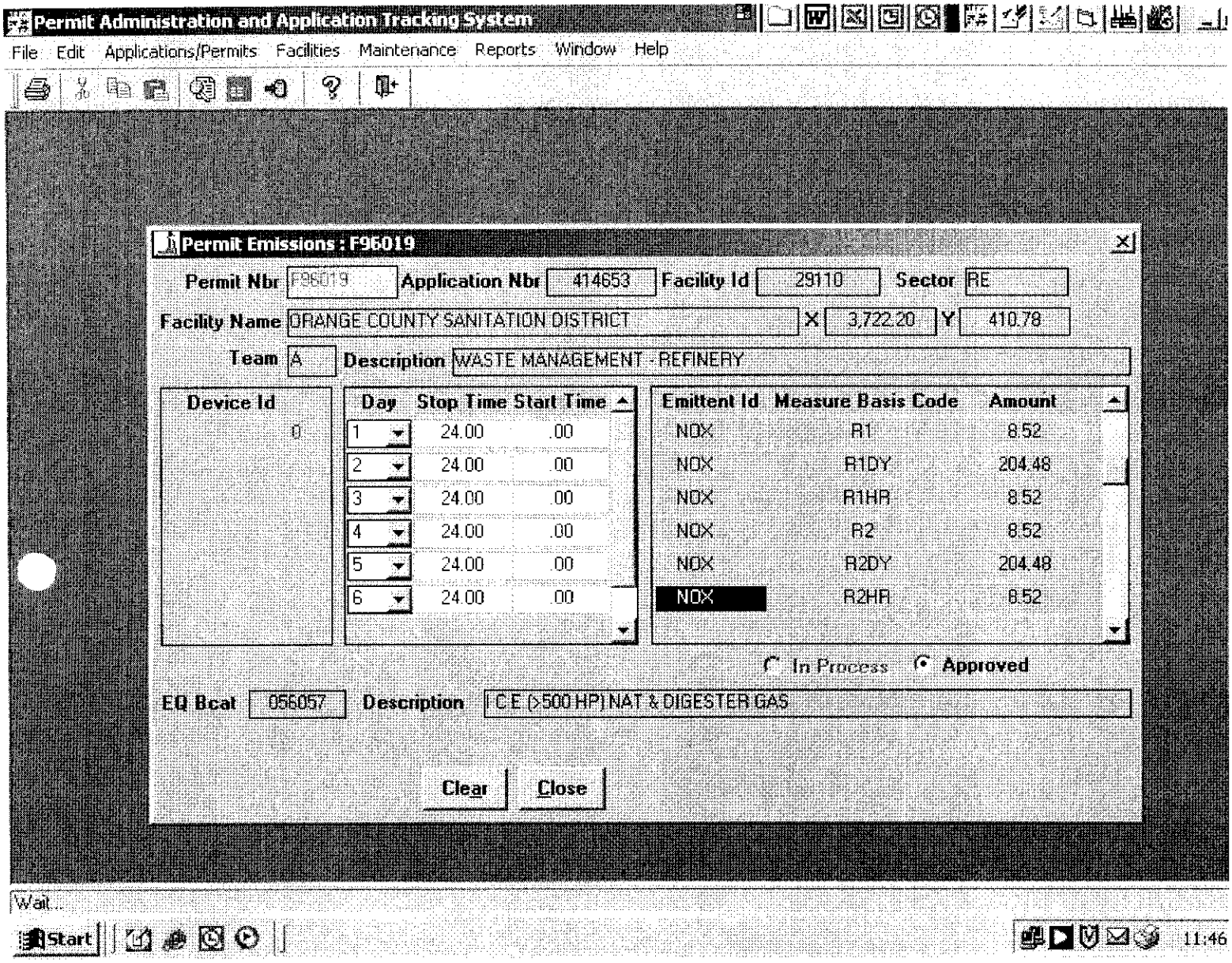
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Team A Description WASTE MANAGEMENT - REFINERY
Device Id
0
Day Stop Time Start Time
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Emittent Id Measure Basis Code Amount
NOX R1 8.52
NOX R1DY 204.48
NOX R1HR 8.52
NOX R2 8.52
NOX R2DY 204.48
NOX R2HR 8.52
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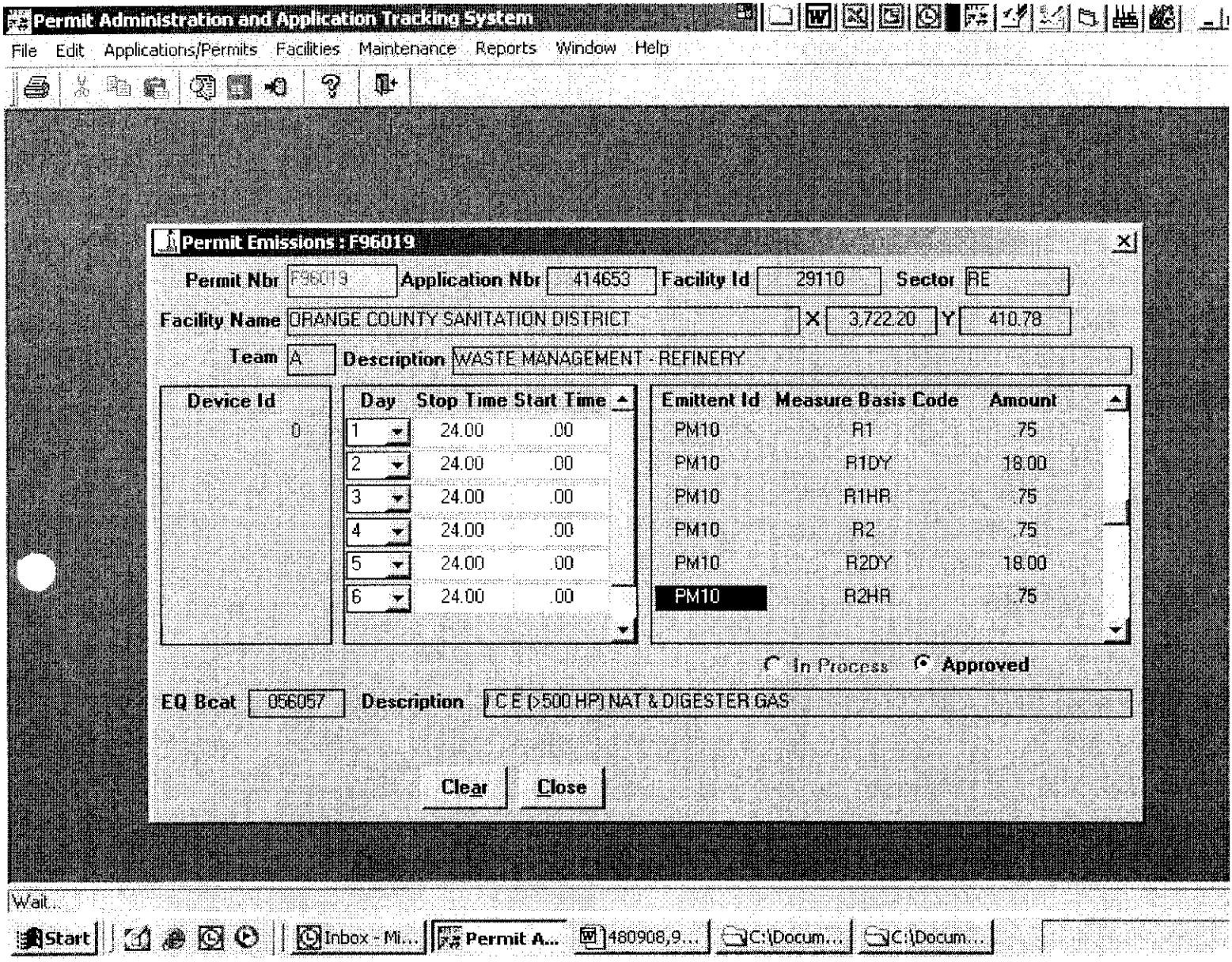
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Facility Name ORANGE COUNTY SANITATION DISTRICT X 3,722.20 Y 410.78
Team A Description WASTE MANAGEMENT - REFINERY
Device Id
0
Day Stop Time Start Time
1 24.00 .00
2 24.00 .00
3 24.00 .00
4 24.00 .00
5 24.00 .00
6 24.00 .00
Emittent Id Measure Basis Code Amount
PM10 R1 .75
PM10 R1DY 18.00
PM10 R1HR .75
PM10 R2 .75
PM10 R2DY 18.00
PM10 R2HR .75
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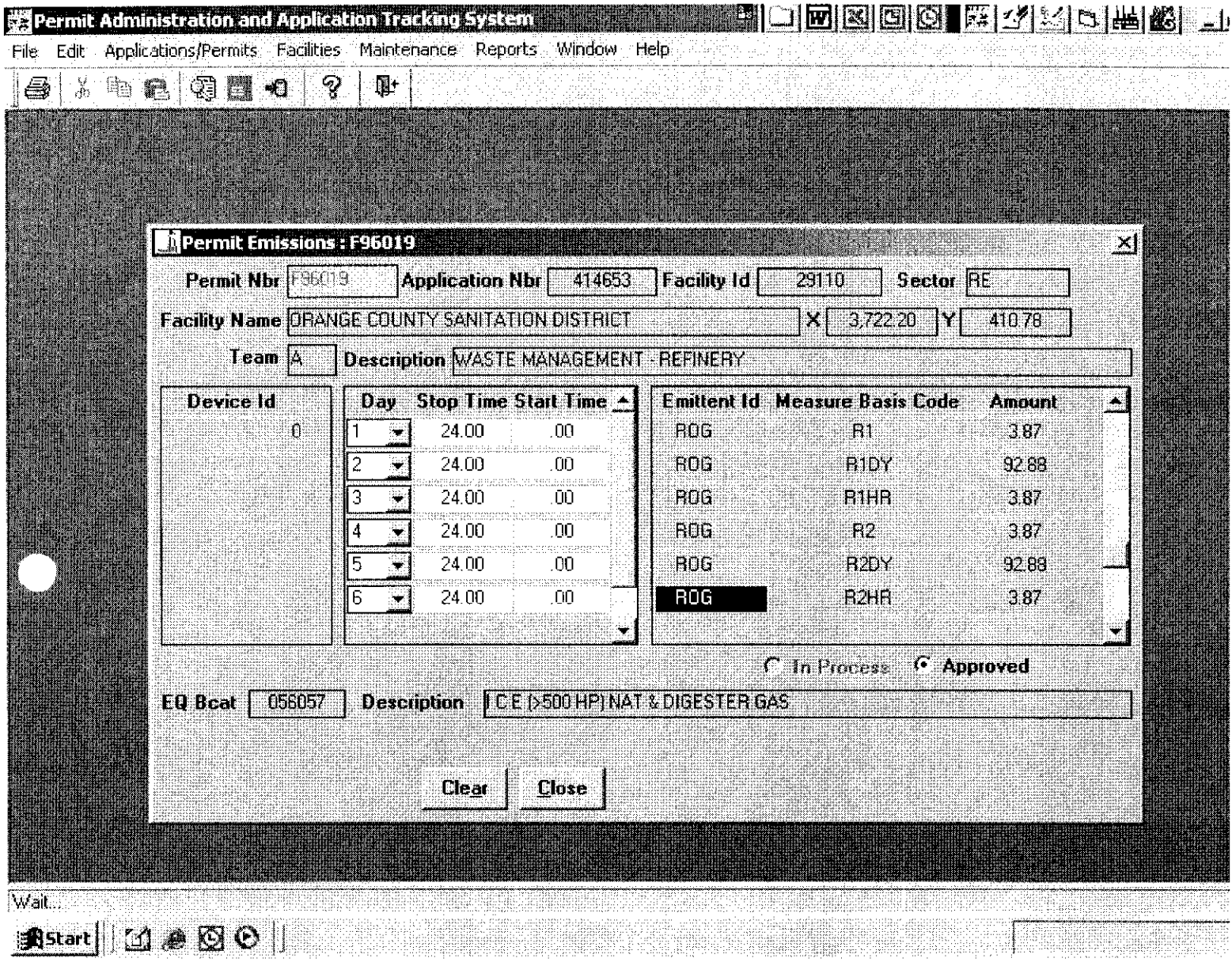
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Facility Name ORANGE COUNTY SANITATION DISTRICT X 3,722.20 Y 410.78
Team A Description WASTE MANAGEMENT - REFINERY
Device Id
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6 24.00 .00
Emittent Id Measure Basis Code Amount
ROG R1 3.87
ROG R1DY 92.88
ROG R1HR 3.87
ROG R2 3.87
ROG R2DY 92.88
ROG R2HR 3.87
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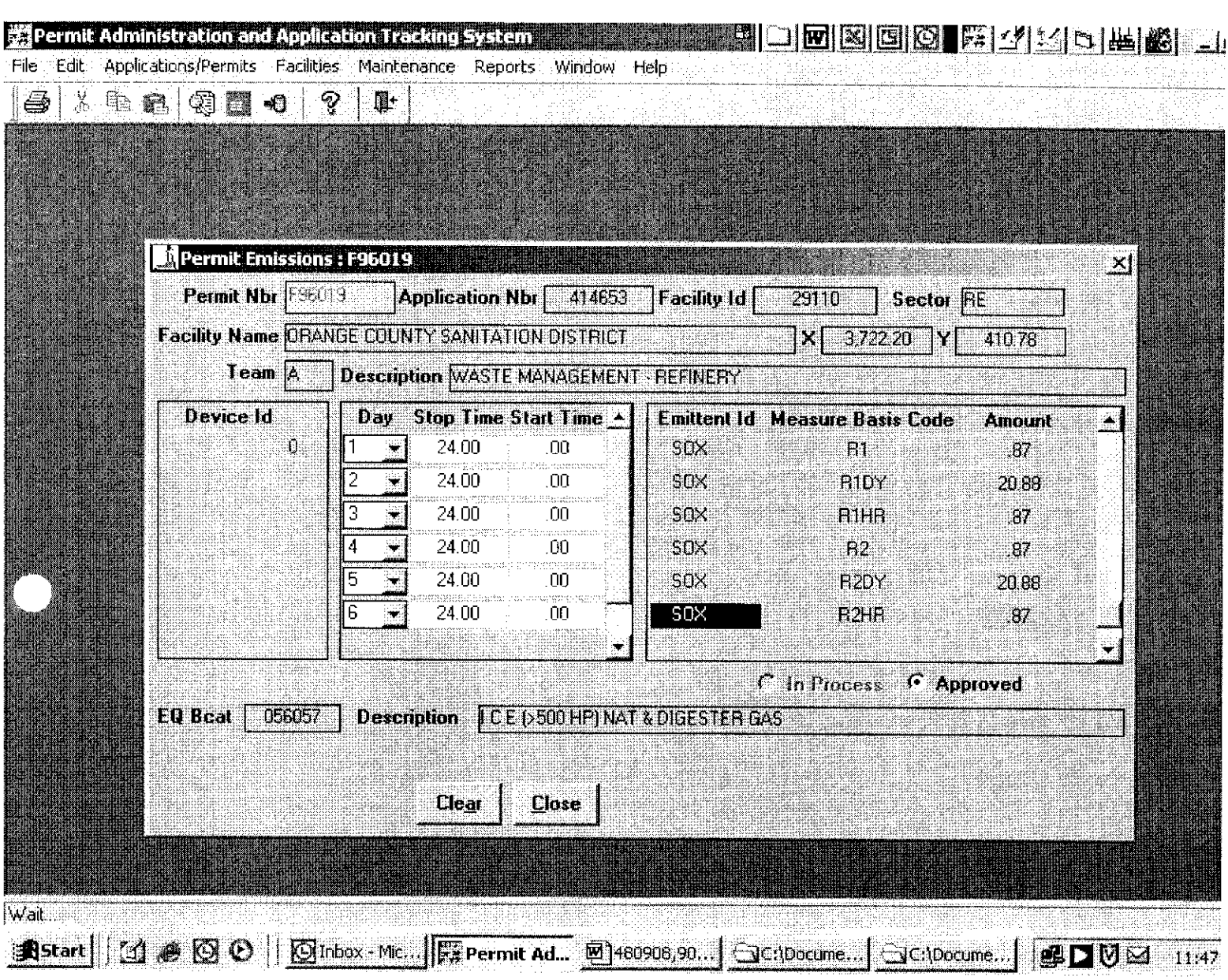
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Permit Emissions : F96019
Permit Nbr F96019 Application Nbr 414653 Facility Id 29110 Sector RE
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Team A Description WASTE MANAGEMENT - REFINERY
Device Id
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Day Stop Time Start Time
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Emittent Id Measure Basis Code Amount
SOX R1 .87
SOX R1DY 20.88
SOX R1HR .87
SOX R2 .87
SOX R2DY 20.88
SOX R2HR .87
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The ECF shall be 1.0 unless:

(i) The engine operator has measured the engine's net specific energy consumption ($q_a$), in compliance with ASME Performance Test Code PTC 17 -1973, at the average load of the engine; and

(ii) The ECF-corrected emission limit is made a condition of the engine's permit to operate.

The ECF is as follows:

$$ECF = \frac{9250 \text{ Btus/hp-hr}}{\text{Measured } q_a \text{ in Btus/hp-hr}}$$

Measured $q_a$ shall be based on the lower heating value of the fuel. ECF shall not be less than 1.0.

The Executive Officer may approve the burning of more than 10% natural gas in a landfill or digestor gas-fired engine, when it is necessary, if: the only alternative to limiting natural gas to 10% would be shutting down the engine and flaring more landfill or digestor gas; or the engine requires more natural gas in order for a waste heat recovery boiler to provide enough thermal energy to operate a sewage treatment plant, and other boilers at the facility are unable to provide the necessary thermal energy.

Once an engine complies with concentration limits effective on and after July 1, 2012, there shall be no limit on the percentage of natural gas burned.

(D) The operator of any new engine subject to subparagraph (e)(1)(B) shall:

(i) Comply with the requirements of Best Available Control Technology in accordance with Regulation XIII if the engine requires a District permit; or

(ii) Not operate the engine in a manner that exceeds the emission concentration limits in Table I if the engine does not require a District permit.

(E) By February 1, 2009, the operator of a spark-ignited engine without a Rule 218-approved continuous emission monitoring system (CEMS) or a Regulation XX (RECLAIM)-approved CEMS shall equip and maintain the engine with an air-to-fuel ratio controller

4/23/2008

TERRY AHN
ORANGE COUNTY SANITATION DISTRICT
P O BOX 8127
FOUNTAIN VALLEY, CA 92728

Facility ID: 29110
Located at: 22212 BROOKHURST ST, HUNTINGTON BEACH

Thank you for filing your application(s) with the South Coast Air Quality Management District (AQMD).

The application number(s) assigned by AQMD to your application package(s) is/are on Page 2 of this letter. Please refer to the information on Page 2 when contacting AQMD for assistance. The information you submitted with your application(s) or in your latest submittal is complete to the extent that allows us to begin processing of your application(s), however some clarifying data may still be needed. The acceptance of your application(s) does not imply that permit(s) has/have been approved. The engineer assigned to process your application(s), as indicated below, may contact you if additional information is required.

If you have any question or need additional information about your application(s), please contact the engineer listed below:

**Engineer:** Gaurang Rawal **Telephone:** (909) 396 - 2543

For general information about AQMD's permitting process, please call (909) 396-2468.

cc: Application file(s)

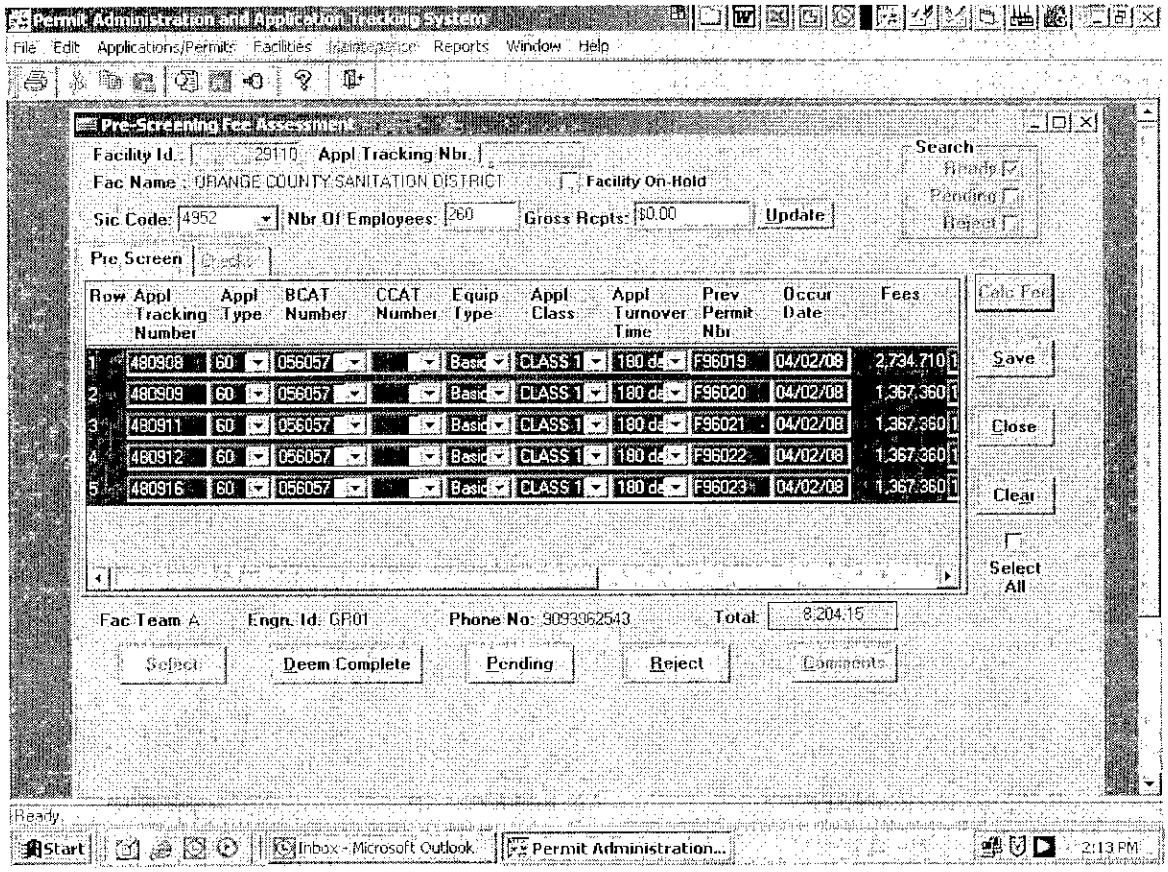
# AQMD PERMIT APPLICATION INFORMATION

**(Please refer to this information when contacting AQMD for Assistance)**

4/23/2008

**Facility ID:** 29110

| Application Number (s) | Equipment Description |
|---|---|
| 480908 | I C E (>500 HP) NAT & DIGESTER GAS |
| 480909 | I C E (>500 HP) NAT & DIGESTER GAS |
| 480911 | I C E (>500 HP) NAT & DIGESTER GAS |
| 480912 | I C E (>500 HP) NAT & DIGESTER GAS |
| 480916 | I C E (>500 HP) NAT & DIGESTER GAS |


Permit Administration and Application Tracking System
File Edit Applications/Permits Facilities Maintenance Reports Window Help
Pre-Screening Fee Assessment
Facility Id: 29110 Appl Tracking Nbr:
Fac Name: ORANGE COUNTY SANITATION DISTRICT Facility On-Hold
Sic Code: 4952 Nbr Of Employees: 260 Gross Rcpts: $0.00 Update
Search
Ready
Pending
Reject
Pre Screen
Row Appl Tracking Number Appl Type BCAT Number CCAT Number Equip Type Appl Class Appl Turnover Time Prev Permit Nbr Occur Date Fees
1 480908 60 056057 Basic CLASS 1 180 da F96019 04/02/08 2,734.710
2 480909 60 056057 Basic CLASS 1 180 da F96020 04/02/08 1,367.360
3 480911 60 056057 Basic CLASS 1 180 da F96021 04/02/08 1,367.360
4 480912 60 056057 Basic CLASS 1 180 da F96022 04/02/08 1,367.360
5 480916 60 056057 Basic CLASS 1 180 da F96023 04/02/08 1,367.360
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Save
Close
Clear
Select All
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# ORANGE COUNTY SANITATION DISTRICT

RECEIVED

'08 MAR 27 P4:07

From: Office of the Executive Officer Date: 3-27-08
To: Wayne + Jay
Cy: Ed, Marty
For your action by: ____ For your info. ✓ handling ✓
Draft response for: ____ signature, cc: ____

March 25, 2008 SCAQMD
EXECUTIVE OFFICE


phone:
(714) 962-2411
fax:
(714) 962-0356
www.ocsd.com

mailing address:
P.O. Box 8127
Fountain Valley, CA
92728-8127

street address:
10844 Ellis Avenue
Fountain Valley, CA
92708-7018




Dr. Barry Wallerstein
Executive Officer
South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, CA 91765-4178

SUBJECT: Compliance with SCAQMD Rule 1110.2 for Five Digester Gas-Fueled Engines at Orange County Sanitation District's Plant No. 2 (SCAQMD Facility ID No. 029110)

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The purpose of this letter is to present the Orange County Sanitation District's (OCSD) permit application for a change of conditions to approve the burning of more than 10% natural gas in five digester gas–fueled internal combustion engines, to avoid the flaring of digester gas, operating at our Plant No. 2 Wastewater Treatment Plant located in Huntington Beach, CA. This request is being submitted to you in accordance with the provision of subparagraph (e)(7) of the Rule 1110.2, adopted by SCAQMD's Governing Board on February 1, 2008. With this permit application, we are also requesting a change of conditions for Efficiency Correction Factor (ECF)-corrected emission limits for the engines.

## Background Information

The five engines at Plant No. 2, regulated by Rule 1110.2, are part of OCSD's Central Power Generation System (CGS). Each of these engines are rated at 4,166 brake horsepower (hp) and can produce up to 3.0 megawatts (MW) of electricity, thus enabling OCSD to operate its wastewater treatment processes using completely internal sources of power. As an essential public service this increases our ability to reliably provide wastewater treatment to over 2.3 million residents and numerous businesses in Orange County. The engines are fueled mostly by the digester gas produced at Plant No. 2 and supplemented by natural gas on an as needed basis. A minimum of 5% natural gas is required to maintain the pilot light for each engine. We also use a small amount of digester gas on boilers for plant process heat and monthly flaring testing.

In 2007, OCSD produced about 73 million cubic feet (mcf) of digester gas, averaged monthly, as shown in *Table 1 - Plant No. 2, Digester Gas Production, Fuel Consumption and Electricity Generation for 2007*. Based on the high heating value of 620-630 BTU/ft$^3$ for digester gas and using an energy conversion efficiency factor of 30-33%, this equates to approximately 6.5 to 7.5 MW electricity generated per month. As shown in *Table 2 - Plant No. 2 Power Demands at Different Weather*

*Conditions*, the average power demand ranges between 7.8 and 8.5 MW during dry weather period increasing to as high as 16 MW during a severe rainstorm.

In order to avoid flaring and meet the average dry-weather power demand, it is necessary to supplement the digester gas by an average of 22% by heat input of natural gas as shown in Table 1.

**OCSD's Options to Address Rule 1110.2**

There are two options available to OCSD to address Rule 1110.2:

Option 1: Operation of Engines at 80% Load and Purchase Power from Southern California Edison (SCE)

Under this option, OCSD would run two engines at about 80% load fueled with 95% digester gas and purchase power from SCE to meet the additional power demand. This would result in flaring of approximately 12 mcf/month of excess digester gas.

Option 2: Purchase Natural Gas to Supplement Digester Gas

Under this option, OCSD would run three engines at an 80% load to consume all of the digester gas produced; and one or more engines would be supplemented with natural gas. This would require approximately 13 mcf/month of natural gas which is between 20-25% of natural gas usage. With this option all digester gas would be utilized and *no flaring* would be required but would subject the engines to the lower emission limits for natural gas-fueled engines. The supplement of natural gas is required to keep the engines in their stable operating range of 80% load. The engine control system cannot regulate the engine speed if operated below a 70% load.

**Conclusion**

OCSD's goal is to completely utilize all of its valuable renewable fuel (digester gas) in the operation of its CGS engines while complying with the intent of Rule 1110.2 requirements. Option 2 would best meet that goal.

In summary, in order to avoid flaring digester gas and operate in compliance with Rule 1110.2 OCSD is requesting your approval to use up to 25% natural gas, monthly averaged, in our engines to supplement digester gas usage during normal operations. We would request that the following language in the engines permit conditions (PTC A/N 414653 to 414657) be added after the current Condition 5:

> "The Operator may burn more than 10% natural gas when it is necessary if the alternative to limiting natural gas to 10% would be shutting down the engine and flaring more digester gas or the engine requires more natural gas in order to provide enough thermal energy to operate the sewage treatment plant"

We have submitted the engines' operational data including the detailed calculation of Emission Correction Factors to your Permitting staff. The updated data and other pertinent information are attached to this letter. Any other information necessary to process the permit application will be submitted to your staff upon request.

If you have questions or further discussion is required, please contact the undersigned at (714) 593-7080. The staff member assigned to this issue is Dr. Vladimir Kogan and he can be reach at (714) 593-7085.

Edward Torres
Director of Technical Services

ET:wh
H:/dept/ts/620/general data/Air Group/Letters/D1_VK_Compliance_Rule 1110.2 Digester Gas-Fueled P-2_ID 029110.doc

c: Jay Chen, Senior Air Quality Engineering Manager
Charles Tupac, Toxics and Waste Management

Enclosures:

- Application for changing of permit conditions Form 400-A
- Check for the Applications Processing Fee in the amount of $8,204.15
- Table 1 - Plant No. 2 CGS Energy Output, Digester Gas Production, and Fuel Consumption for 2007
- Table 2 - Plant No. 2 Power Demands at Different Weather Conditions

## Table 1
## Plant 2 Digester Gas Production, Fuel Consumption and Electricity Generation for 2007

| | | Digester Gas Usage | | | Natural Gas Usage | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Digester Gas Production (kscf) | Quantity (kscf) | High Heating Value (Btu/ft$^3$) | Heating Value (therms) | Quantity (kscf) | High Heating Value (Btu/ft$^3$) | Heating Value (therms) | Total Fuel Usage (therms) | Percent Natural Gas Usage | Engine Output (kwh) | Steam Turbine (kwh) | Total Electricity Generated (kwh) |
| January | 83,200 | 76,462 | 626 | 478,653 | 9,238 | 1,020 | 94,231 | 572,884 | 16.45% | 6,370,264 | 205,736 | 6,576,000 |
| February | 74,100 | 68,047 | 622 | 423,250 | 9,953 | 1,027 | 102,219 | 525,469 | 19.45% | 5,990,381 | 185,619 | 6,176,000 |
| March | 80,500 | 75,245 | 625 | 470,283 | 9,534 | 1,018 | 97,058 | 567,341 | 17.11% | 5,530,447 | 197,553 | 5,728,000 |
| April | 73,200 | 71,574 | 625 | 447,336 | 10,591 | 1,018 | 107,813 | 555,149 | 19.42% | 4,590,124 | 177,876 | 4,768,000 |
| May | 74,600 | 71,972 | 621 | 446,947 | 5,213 | 1,020 | 53,169 | 500,116 | 10.63% | 4,615,155 | 200,845 | 4,816,000 |
| June | 71,600 | 70,639 | 624 | 440,785 | 16,881 | 1,019 | 172,019 | 612,805 | 28.07% | 4,709,525 | 218,475 | 4,928,000 |
| July | 72,300 | 72,372 | 634 | 458,840 | 17,345 | 1,020 | 176,922 | 635,762 | 27.83% | 5,263,663 | 176,337 | 5,440,000 |
| August | 73,700 | 73,964 | 634 | 468,929 | 17,274 | 1,018 | 175,844 | 644,773 | 27.27% | 5,395,018 | 236,982 | 5,632,000 |
| September | 65,200 | 65,705 | 627 | 411,970 | 18,088 | 1,016 | 183,769 | 595,739 | 30.85% | 5,035,483 | 148,517 | 5,184,000 |
| October | 68,400 | 68,565 | 631 | 432,645 | 15,401 | 1,016 | 156,471 | 589,116 | 26.56% | 4,944,000 | 0 | 4,944,000 |
| November | 66,600 | 68,012 | 634 | 431,196 | 13,186 | 1,021 | 134,629 | 565,825 | 23.79% | 4,704,000 | 0 | 4,704,000 |
| December | 70,300 | 68,995 | 630 | 434,671 | 13,675 | 1,019 | 139,345 | 574,016 | 24.28% | 4,832,000 | 0 | 4,832,000 |
| *Average* | ***72,808*** | ***70,963*** | ***628*** | ***445,459*** | ***13,032*** | ***1,019*** | ***132,791*** | ***578,250*** | ***22.64%*** | ***5,165,005*** | ***145,662*** | ***5,310,667*** |
| TOTAL | **873,700** | **851,552** | | **5,345,505** | **156,379** | | **1,593,489** | **6,938,995** | | **61,980,060** | **1,747,940** | **63,728,000** |

kscf = 1000 standard cubic feet

# Table 2
## Plant 2 Power Demand for 2007

| Conditions | Total OCSD Flow (MGD) | Energy Demand (MW) | Numbers of Engines in Operation | Monthly CGS Output (MW) |
|---|---|---|---|---|
| **Dry Weather** | 240-320 | 7.8-8.5 | 3 @ 70-80% Load, 70-80% Di-Gas | 7.1-8.8 |
| **Wet Weather (Heavy Rain/Melting Snow)** | 320-400 | 10.0-12.0 | 4 @ 90-100% Load, 60% Di-Gas | 9.3-10.7 |
| **Peak Wet Weather (Heavy Rainstorm)** | 400-500 | 13.0-16.0 | 5 @ 100% Load, 50% Di-Gas | 12.0-15.0 |

MGD = Million Gallons per Day
MW = Megawatt

ORANGE COUNTY SANITATION DISTRICT

10844 Ellis Avenue, P.O. Box 8127
Fountain Valley, CA 92728-8127
(714) 962-2411

VENDOR NO. 15843 DATE: 03/05/08 CHECK NO. 1000059023

VENDOR NAME SOUTH COAST AIR QUALITY MGT RE

| INVOICE NO. | INVOICE DATE | DESCRIPTION | GROSS AMOUNT | DISC. - ADJ. | PAYMENT AMOUNT |
|---|---|---|---|---|---|
| PERMIT FEES | 02/20/08 | | 8,204.15 | | 8,204.15 |
| | | AMOUNT - U.S. DOLLARS | | | $*****8,204.15 |